ROCK PRODUCTS

DECEMBER 1943

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ELVERITE
TUBE MILL
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. . . will be assured by this shipment of B&W Elverite Tube Mill Castings.

These advantages are of great importance with the present-day critical manpower situation, and they will be of equally great importance from the standpoint of economical operation in the post-war period.

For economy and quality, specify Elverite.

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THE BABCOCK & WILCOX COMPANY
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All over the World-

PORTER LOCOMOTIVES

are helping

PASS THE AMMUNITION

In every theatre of the war, Porter Locomotives are to be found, somewhere behind the lines, keeping the everlasting stream of supplies rolling toward the fighting front.

PORTER 0-6-0 (0-1-1 Tank) Steam Locomotive with side tanks, widely used for military and industrial switching.

PORTER Diesel-Electric, powered by two independent power plants.

PORTER 2-8-2 "Mikado" Type Steam Locomotive for long road hauls.

H. K. PORTER COMPANY, Inc.

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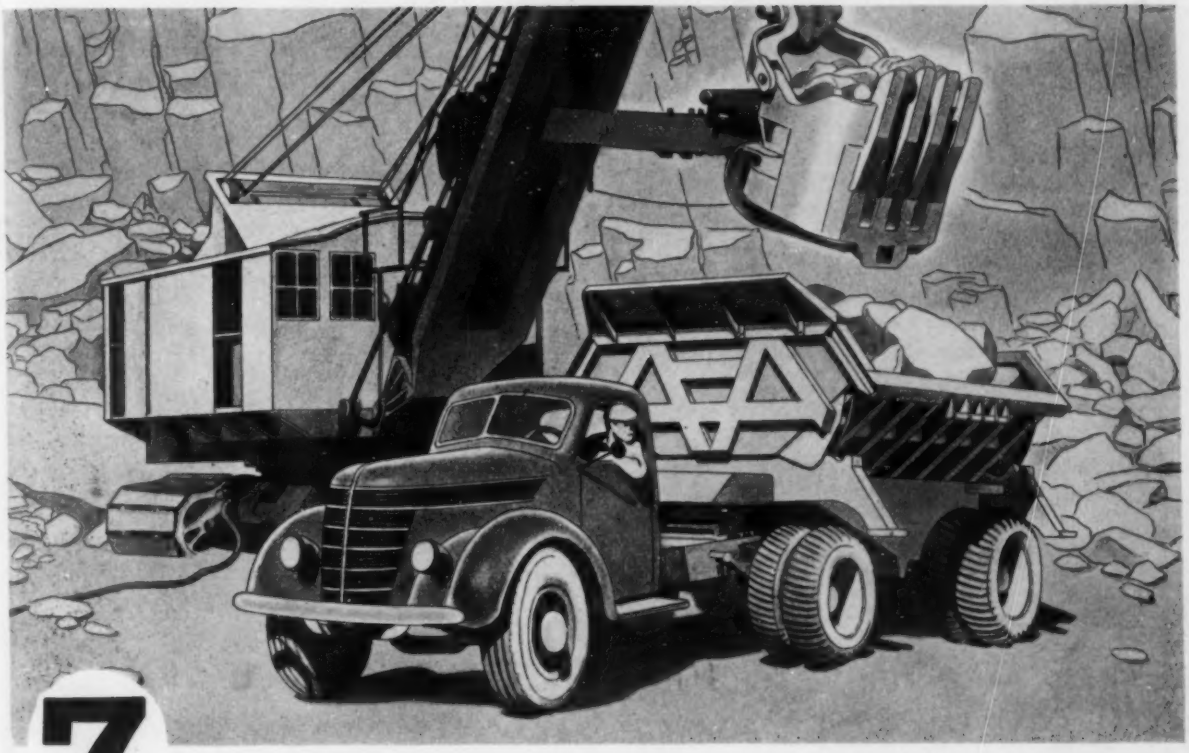
—measured in millions of tons!



7 YEARS AGO a crushed-stone producer asked us to build the first semi-trailer for quarry haulage The idea was new, untried, challenging!

EASTON engineers, experienced through many years of pioneering in all phases of track and trackless quarry haulage, were alert to the possibilities of this new idea. Through the semi-trailer they foresaw the application of low-cost truck units to heavy duty quarry service, with the consequent saving in tires, fuel and manpower. They foresaw the value of continuous shovel and crusher operation made possible through a steady flow of material. They foresaw the amazing new low costs per ton of rock hauled.

The first EASTON Semi-Trailer, of approximately 15-tons capacity, fulfilled all expectation. Our engineers continued to work on the patented basic design. Shock-proof dumping was made possible by means of stabilizer feet made to rest on the crusher-hopper wall as the body discharged its load. Thus the tractor chassis was relieved of the shock and strain of dumping. Designs were completed for units ranging from 10 to 25 tons capacity. Dumping was accomplished by the EASTON automatic, fast-action, overhead hoist at a fixed point. Later developments extended the line of units to 30 to 40 tons capacity using the EASTON eight-tired, full-floating, tandem-axle running gear.

OVER 30 MILLION TONS A YEAR

Now, only seven years after the first unit was built, the record of EASTON Semi-Trailers in quarry service stands unchallenged for high tonnage and low cost. Today, as your watch ticks off each second, a ton of raw material is dumped from an EASTON Semi-Trailer into a crusher-hopper. Unknown seven years ago, these big modern containers are now hauling a total combined annual payload estimated at over 30 million tons a year!

Today it is important to remember that many gallons of precious fuel, many man hours and many miles of tire service are being saved where EASTON Semi-Trailers (Trackless Mine Cars) were installed to replace more costly equipment.

Certainly we are proud of our record of achievement. Yet, now, when wartime restrictions have reduced equipment orders to a minimum, we cannot rest on past accomplishments alone. To help in the conservation of useful equipment EASTON Engineers are cooperating with tractor and tire manufacturers in offering assistance to quarry operators.

For bigger payloads with less fuel, less rubber, less manpower "keep moving with EASTON". Write to Engineering Counsel, Easton Car & Construction Company, Easton, Pa. B-1010

EASTON

INDUSTRIAL CARS
TRUCK BODIES · TRAILERS
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MAY WE HELP YOU SOLVE A "RECOVERY" PROBLEM

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Our PILOT laboratory is well equipped and staffed to test, experimentally, the application of FLOTATION to your product. Famed throughout the world for its practical mill results in ore concentration—the principle is proving—with equal success—its adaptability to the non-metallic and the process industries.

AGITAIR FLOTATION MACHINE

Now applied to CEMENT . . . PHOSPHATE . . . MAGNESITE . . . FLUORSPAR . . . FELDSPAR . . . GRAPHITE . . . TALC . . . MICA . . . BARITE . . . SPODUMENE . . . COAL. Write us a summary of your special problem. We will gladly explain our laboratory and consultation service. No obligation on your part.

METALLURGICAL DIVISION

THE GALIGHER COMPANY

48 South 2nd East

SALT LAKE CITY, UTAH

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4-Time Vote for Lorains . . .

FROM CARBON LIMESTONE CO.

WHEN *all* the cards are on the table, there is only one answer to the question, "What is the best shovel for rock service?"

That answer spells L-O-R-A-I-N. It's there in the heavy, powerful design and the host of time and maintenance-saving features. It's there in the performance records of hundreds of quarry operators from coast to coast.

And it's there in the number of repeat orders from successful companies like Carbon Limestone, purchasers of 4 Lorains. People who know the qualifications of a real rock shovel say,

"Lorains move more material, faster, at lower cost".

THE THEW SHOVEL COMPANY LORAIN, OHIO

thew-Lorain SHOVELS

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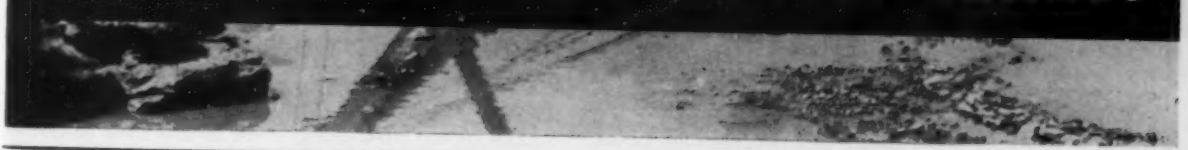

That the WHEELS OF WAR may ROLL FASTER!

THE IOWA LINE
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ROCK AND GRAVEL CRUSHERS
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WASHING PLANTS
TRACTOR-CRUSHER PLANTS
STEEL TRUCKS AND TRAILERS
KUBIT IMPACT BREAKERS

THEY DIDN'T GO "foot slog, slog, slog, slogging over Africa" when Rommel was on the run. The man with the trucks got there "first with the mostest!"

Trucks, planes — all wheeled equipment moves over roads — this is a modern mechanized war and to beat the enemies we have takes the best.

Wherever there is action you'll find a Cedarapids crushing plant pouring out aggregate that the wheels of war may roll faster.

But there is something more than that coming out of the wartime construction and operation of machinery. The performance of a crushing plant under the press of war service can teach valuable lessons for peacetime operation.

Cedarapids owners of the future are going to reap the benefits of the vast wartime experience that Iowa engineers are building up. They are going to reap the benefits of improved design, refinement, smoother operation, higher output and increased economy — benefits that could only come from the watching of a tremendous number of machines under pressure.

Iowa can meet your future plans, whether it is for crushers, bins, screens, asphalt plants, driers or portable or stationary equipment. Now is the time to familiarize yourself with Cedarapids equipment. Come to headquarters.

IOWA MANUFACTURING COMPANY, Cedar Rapids, Iowa

Convert to Coal

. . . with the Raymond BOWL MILL for direct-firing your rotary kilns and industrial furnaces . . . thus leaving the critical fuels, natural gas and oil, for urgent military needs.

You will be well repaid in the extra economies you gain, plus the advantages of thermostatic control, minimum supervision, and easy adjustability while running.

For cement, lime, dolomite and magnesite kilns, use the BOWL MILL to cut costs, increase firing efficiency and improve kiln production.

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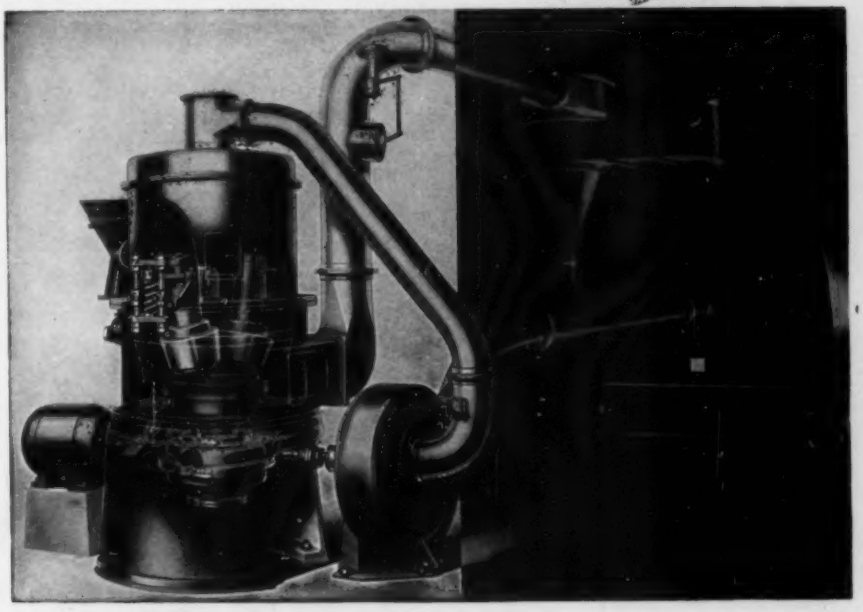

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Handles any grade or moisture coal. Noiseless, vibrationless, dustless operation.

Write for Catalog No. 43

MICROGRAPHS OF DIATOMACEOUS (INFUSORIAL) EARTH

magnified fifteen thousand times with the RCA Electron Microscope

The lower half of this picture is a micrograph (X 15,000) of diatomaceous (infusorial) earth. The particle with the holes is a diatom. The needle-like crystals are particles of attapulgus clay. The upper half of the picture is a micrograph showing larger diatoms at 12,000 X.

THE RCA ELECTRON MICROSCOPE

gives you new, surprising knowledge of rock products

THE micrographs shown here are typical of the amazing detail revealed by the RCA Electron Microscope to the rock products research worker. Characteristics of rock products are disclosed that have a fundamental bearing on the quality and value of such products. That is why leaders in the industry recognize and are using the electron microscope, pioneered and developed by RCA, as an important new tool in development and control. For full information regarding the RCA Electron Microscope please address Electron Microscope Section, RADIO CORPORATION OF AMERICA, Camden, New Jersey.

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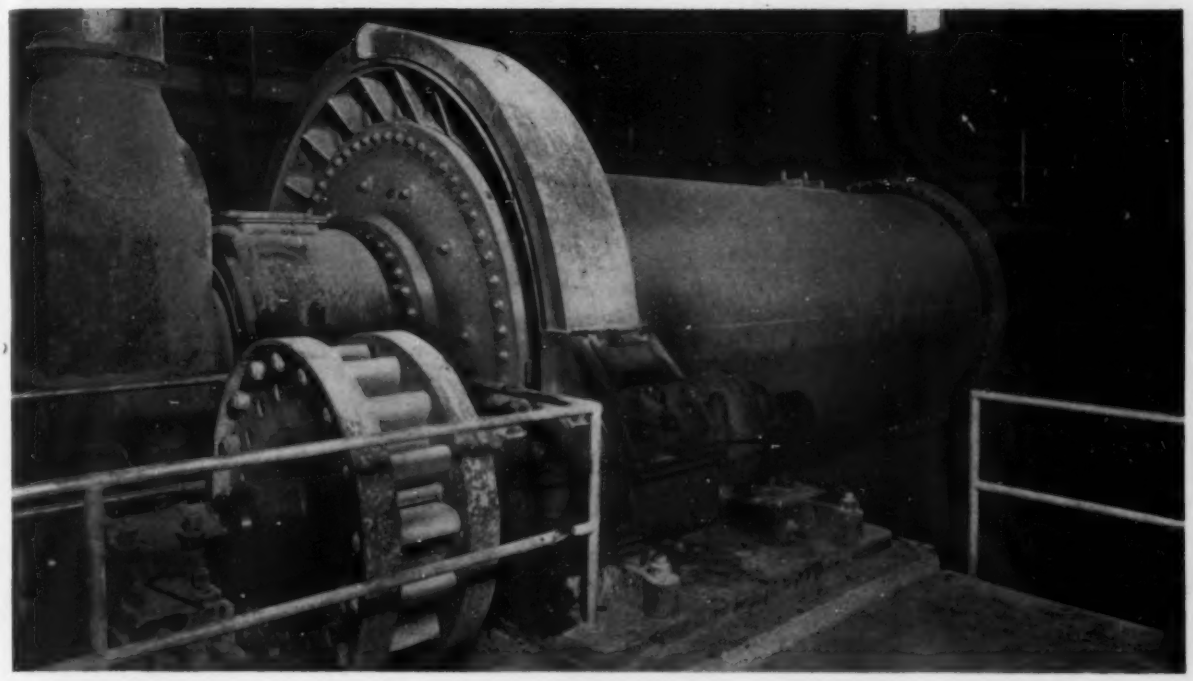

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Rotary Kilns
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Rotary Slakers
Scrubbers
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Crushing Rolls
Grinding Mills
Ball Mills
Rod Mills
Tube Mills
Pug Mills
Wash Mills
Feeders
Rotary Screens
Elevators

THE SHELL OF THIS

TRAYLOR GRINDING MILL

IS IN ONE PIECE

When we started streamlining the shells of TRAYLOR GRINDING MILLS, years ago, it was not for the sake of appearance, although that DID help. What we were after was more strength without increasing the already too great weight. And we wanted greater dependability, too—freedom from popping rivet heads, etc.

You see, the size of grinding mills had been increasing rapidly until the point was reached when it was difficult to make a shell that would stand up under its own weight plus the tremendous combined weight of material and grinding charge.

So we developed a unique and original welding technique, by the use of which is produced a shell in one piece, as true and strong and stiff as if it were a tube drawn from an immense steel forging. In fact, the joints between the various plates are so thoroughly fused as to be stronger than the parent metal so that the plates lose their identity in the complete unit. One other advantage is gained, along with this multiplied strength and rigidity—the welded shell is lighter than one made of the same thickness of plate with the old style riveted butt-strap construction.

This construction has been applied to ALL sizes of Traylor Grinding Mills, as well as our Rotary Kilns, Coolers, Dryers, Slakers, Converters and numerous other machines having cylindrical shells.

Investigate Traylor Grinding Mills. Our representative will call for a talk-it-over, if you like. Write!

GET OUR BULLETIN 2103

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The Navy knows the Answers

In our Navy, the world's most formidable fighting machine, Diesel-powered craft of all kinds are lubricated with Standard of California's RPM DELO. The answers in this naval quiz tell you why. They'll solve your problems on how to squeeze more efficiency out of your Diesels—and cut maintenance costs.

Q. Can a submarine drown in air?

A. Yes. Her Diesels "breathe in" great quantities of air which cause ordinary oils to turn gummy, stick rings and hasten engine failure. In today's subs, RPM DELO eliminates this ring-sticking, reduces sludge and deposits—greatly increases cruising range.

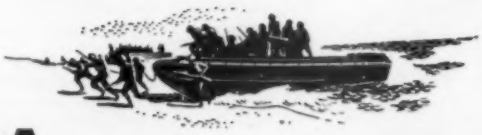
Q. How do you put a bone in the teeth of a DE?

A. Powerful Diesels put that speed wave under the bow of a Destroyer Escort. With RPM DELO lubricating her big engines and keeping them at top efficiency, a Destroyer Escort can sprint like a racehorse, even at the end of a long convoy trip.

Q. What is the most explosive part of a minesweeper?

A. Her engine. Thousands of times a minute, fierce explosions sear her cylinders. But they're safe with RPM DELO because it contains special additives that make it cling to hot spots, give constant point-of-wear protection, even under most severe conditions.

Q. What is the most important duty of a landing barge?



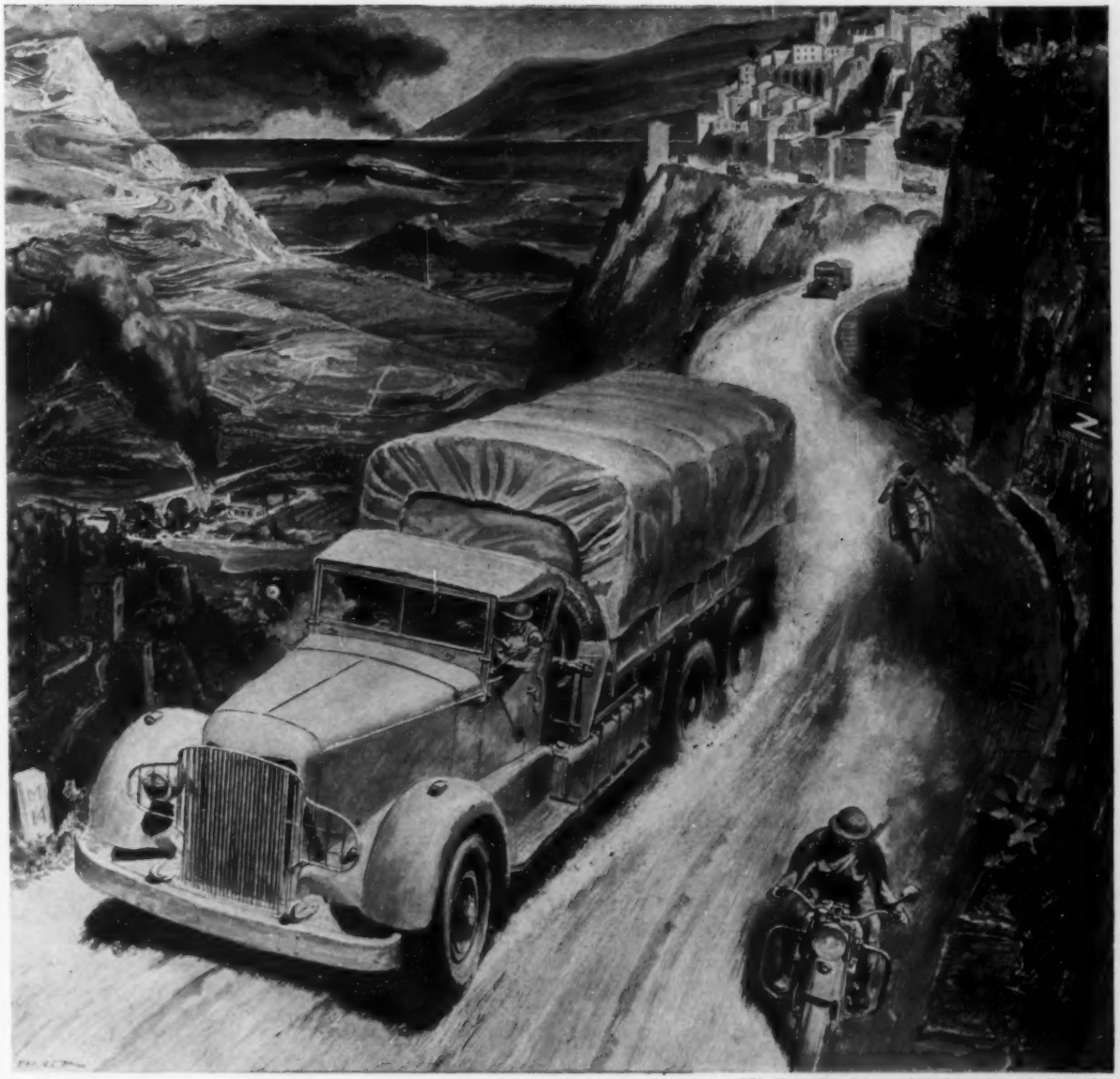
A. To keep in action—because a beachhead breakdown could be disastrous. RPM DELO in a landing boat's Diesel gives it extra protection against breakdowns. RPM DELO often cuts Diesel repair bills in half, doubles the time between overhauls, minimizes wear.

RPM DELO

RPM DELO is marketed under the following names: RPM DELO • Caltex RPM DELO
Kyso RPM DELO • Signal RPM DELO • Imperial-RPM DELO CONCENTRATE • Sohio RPM DELO

STANDARD OIL COMPANY OF CALIFORNIA

Ask your Diesel engine manufacturer or distributor for the RPM DELO supplier in your vicinity



©1943 MACK MFG. CORP.

A big 10-ton, Diesel-powered Mack in grim war paint rushes supplies to the front. Sketched from photos, by Peter Helck.

WAR REPORT... WITH A PEACETIME TWIST?...

For your future reference, we'd like to put two facts on the record now. *Fact One*—there are *more* Mack Diesels in the United Nations' armies than any other make of heavy-duty Diesel truck. *Fact Two*—the only 10-ton Diesel trucks used by United Nations' armies which are made and powered by one manufacturer are Macks. This may surprise you . . . and it may mean a lot some day when *you* are deciding what Diesel to buy.

Mack Trucks, Inc., Empire State Building, New York, N. Y. Factories at Allentown, Pa.; Plainfield, N. J.; New Brunswick, N. J. Factory branches and dealers in all principal cities for service and parts.

Mack

TRUCKS
FOR EVERY PURPOSE
ONE TON TO FORTY-FIVE TONS

BUY U. S. WAR BONDS

IF YOU'VE GOT A MACK, YOU'RE LUCKY...IF YOU PLAN TO GET ONE, YOU'RE WISE!

Flexibility—to meet varying wartime market

TELSMITH

1 & 2 Two Telsmith 3' x 10' Triple Deck Pulsators (sizing screens)

3 Telsmith 4' x 10' Triple Deck Pulsator (scalping screen)

4 Telsmith 36" Gyrasphere Secondary Crusher

Q-10

Closely co-operating with the operators in designing this crushing plant . . . the newest in Pennsylvania's anthracite region . . . Telsmith engineers again demonstrated their "know how" ability. For Banks Stone & Sand Co., Scranton, Pa., the operators, this is their third Telsmith-designed plant.

This West Mountain plant is on a large sandstone deposit, six miles from Scranton. Its product market is wide and varied—with defense plant and mining projects, municipal and state needs to be served—all with different requirements.

Such a market demands a plant with a high capacity, yet one that can turn out quality specification products. Ample stock pile areas had to be created. And the high quarry level and side hill topography of the location utilized to the best advantage.

That's just the kind of a job Telsmith Balanced Plant Service is organized to do. That's why and how this plant turns out 100 tons per hour . . . and reduces a high percentage of it into chip sizes. And it has real flexibility . . . making several specification products at one time.

The plant contains the following equipment by Telsmith:

36" x 12" Telsmith Heavy Duty Apron Feeder; 4' x 12' Telsmith Triple Deck Pulsator (scalping screen); 4' x 10' Telsmith Triple Deck Pulsator (scalping screen); 36" Telsmith Gyrasphere Secondary Crusher; No. 7 Telsmith Belt Elevator, with 52' centers; two 3' x 10' Telsmith Triple Deck Pulsators (sizing screens).

For Telsmith service and equipment guide, get Bulletin 11.

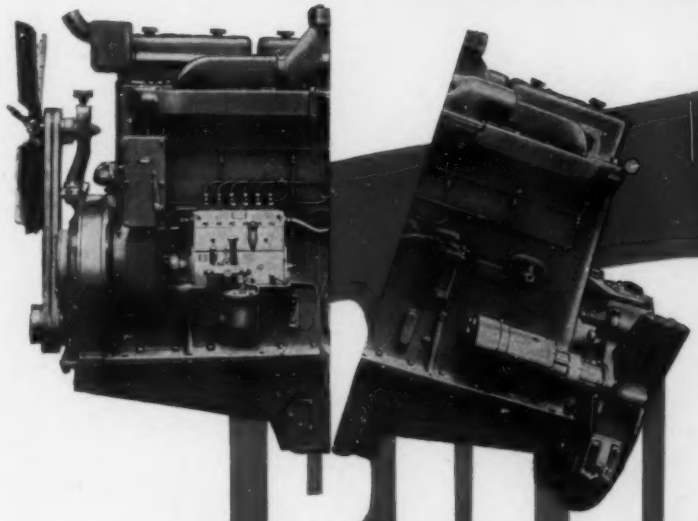
SMITH ENGINEERING WORKS, 508 E. CAPITOL DRIVE, MILWAUKEE 12, WISCONSIN

Cable Addresses: Sengworks, Milwaukee—Concrete, London

Room 1604—50 East 42nd St. New York 17, N.Y. | 211 W. Wacker Drive Chicago 6, Ill. | 713 Commercial Trust Bldg. Philadelphia 2, Pa. | 19-21 Charles St. Cambridge 41, Mass. | G. F. Seeley & Co. Toronto, Ont. | Mines Eng. & Eqpt. Co. San Francisco 4—Los Angeles 14

Brandeis M. & S. Co. Louisville 8, Ky. | Charleston Tractor & Eqpt. Corp. Charleston 22, W. Va. | Roanoke Trac. & Eqpt. Co. Roanoke 7, Va. | Clift L. Priester 911 S. 3rd St., Memphis, Tenn. | Wilson-Weesner-Wilkinson Co. Knoxville 8 and Nashville 6, Tenn.

NEGLECT CUT THE LIFE of this engine in half...



BUDA

...ARE YOU TAKING CARE OF YOURS?

THE many years of useful service built into your Buda engine are the result of painstaking care in design, selection of materials and skilled workmanship. Give your engine the same care in lubrication and regular maintenance, and you'll get every hour of smooth performance out of it. Start regular engine maintenance now . . . keep your engine on the job for Victory! Your Buda distributor will gladly help you — see him today.

the BUDA Co.

HARVEY (Chicago Suburb) ILLINOIS

Get in the Scrap

. . . don't make it!

Every engine part you save means one more for the battlefront. Take care of your engine *regularly*—check your instruction book for details on lubrication and service.

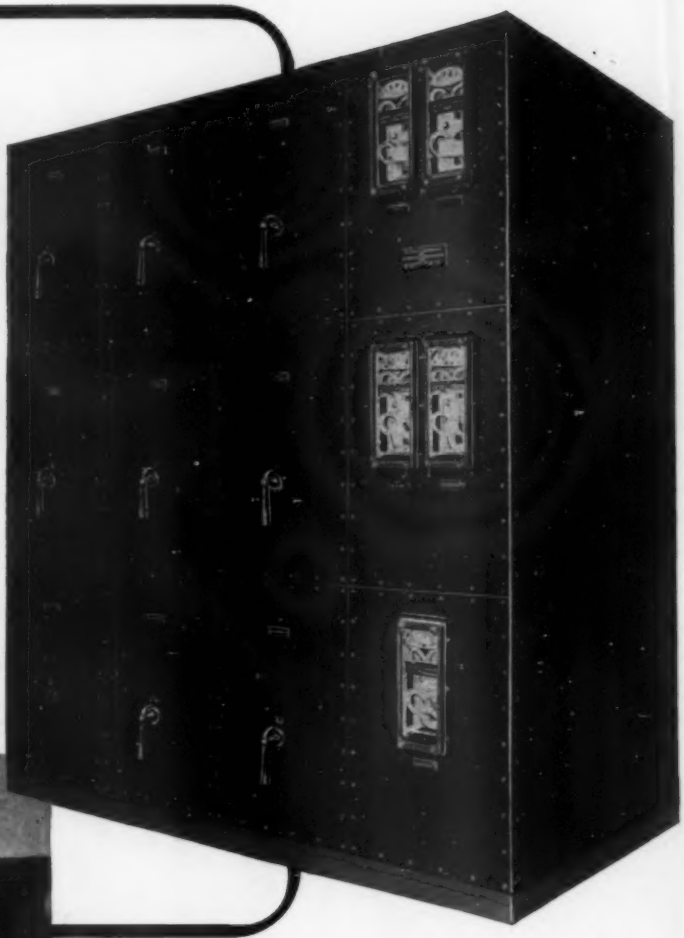
ORDINARY DIESELS

. . . High cylinder pressures produce sledge-hammer blows that punish pistons, rods and crankshaft every power stroke.

BUDA
Low-Pressure DIESELS

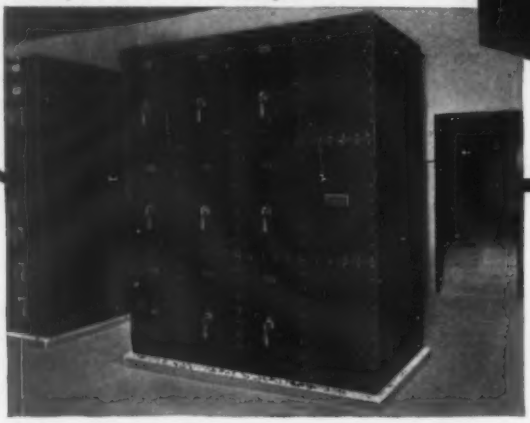
Prolonged "Low-pressure" combustion delivers a smooth, steady power stroke that cuts vibration saves parts.

I-T-E MULTUMITE SWITCHGEAR IN *Cement Plants*



Right:
Switchboard housing eight air circuit breakers for 440-volt service in a new cement plant. This board is one of twenty-five designed and built by I-T-E for one project. The photograph shows the board assembled at the I-T-E factory prior to shipment as a complete unit ready for installation.

Below:
Installed view of one of twenty-five switchboards provided by I-T-E for a new cement plant.



I-T-E switchgear for cement-plant service offers an example of the adaptability of I-T-E designs to purchasers' requirements. The boards illustrated above are standard with respect to the circuit breakers, their bus connections, their auxiliary wiring and the framework of the structure. Enclosed buses, however, are especially designed to operate with low temperature rise in keeping with conditions peculiar to the service. Special provision has been made, also, to keep penetration of dust at a minimum by gasketing all doors and panels and fastening them with closely-spaced machine screws. Finish, as always on I-T-E switchgear, is durable.

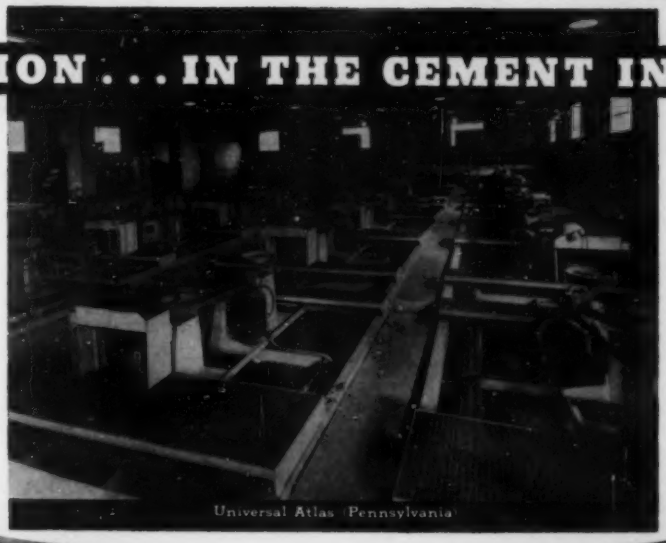
Standard I-T-E practices for design and construction of air switchgear are identified and illustrated in Bulletins 4207 (Drawout) and 4208 (Stationary). At your request, we shall promptly send copies to you, and our engineers will be glad to talk with you about adaptions to meet the requirements of your plant.

I-T-E **AIR SWITCHGEAR**
IMMERSED IN AIR • ENCASED IN STEEL
CIRCUIT BREAKER CO., PHILADELPHIA, PA.

Valley Forge (Pennsylvania)

Permanente (California)

FLOTATION . . . IN THE CEMENT INDUSTRY


Universal Atlas (Pennsylvania)

Alpha Cem. Co., Ltd. (South Africa)

Pargas, Willmanstrand (Finland)

Seventy percent of all the new cement plant capacity built (in U.S.A.) since 1932 installed flotation.

The process extends the life of raw material deposits. Cement of the highest quality and uniformity can be produced from inferior raw materials, permitting the use of deposits heretofore considered unsuitable.

Benefits through the use of the Breerwood Process range throughout most of the operating departments of a cement plant. In some instances the saving in quarry operation alone more than offsets the cost of flotation.

We design and equip complete plants for handling cement raw materials. Our laboratory is fully equipped for test work on an experimental or commercial scale. Write us for particulars.

National (Pennsylvania)

Argentine Port. Cem. Co. (South America)

SEPARATION PROCESS COMPANY

CATASAUQUA, PENNSYLVANIA

St. Regis VALVE PACK SYSTEMS... *Available*

TO SAVE TIME — MANPOWER — MONEY

1 SAVE TIME. Preweighing and forcing cement at high speed through the valve opening, the St. Regis Packer under average operating conditions packs from 8 to 24 (94 lb.) Multiwall Bags per minute . . . saves from 30% to 50% in actual manhours.

2 SAVE MANPOWER. *Only one* operator is required on the St. Regis Packer even when it has 2 or 4 filling tubes. Since all lifting of bags is eliminated, the machine can be successfully operated by a woman where the manpower shortage is acute.

3 SAVE MONEY. Installed and operated at minimum expense and eliminating the need for any closing equipment, the St. Regis Valve Bag Packer assures lasting conomy.

4 The number of these machines available for immediate installation is limited. If interested please advise our nearest office.

MULTIPLY PROTECTION • MULTIPLY SALEABILITY

ST. REGIS PAPER COMPANY

TAGGART CORPORATION • THE VALVE BAG COMPANY

NEW YORK: 230 Park Avenue

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BATES VALVE BAG CO., LTD.
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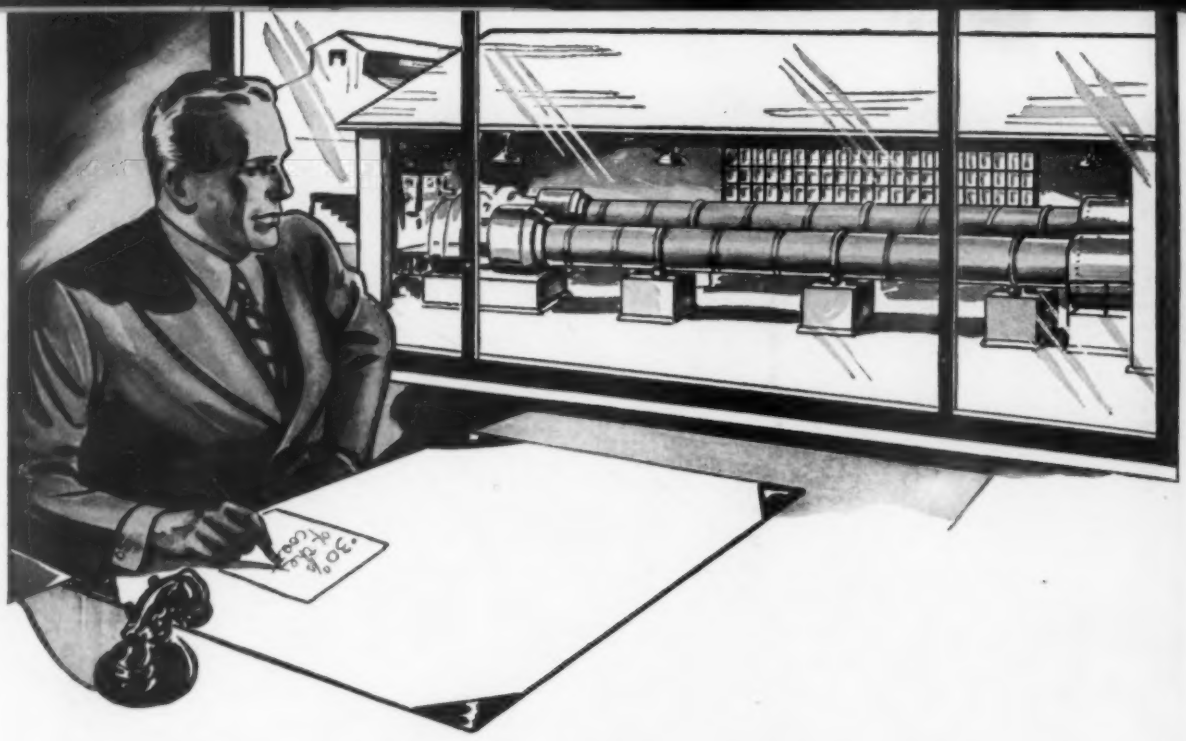
The best way to lick any job is to plan to lick it . . . to make sure that your equipment meets the requirements of the job with adequate margins . . . and meets also your personal requirements as to dependability, original investment, low processing and maintenance costs. It is for these reasons that more and more operators plan first to determine their own requirements, and *Plan with Pioneer.*

Planning with Pioneer puts at your disposal, sitting on your side of the desk, an engineering and manufacturing organization that can be of genuine help to you in selecting the type and size of any Pioneer equipment you need.

Pioneer engineering is of two phases. First is the designing of units that will do best, certain specific types of jobs. The second phase is one of coordinating these Standard Pioneer Units into a complete plant, so that all units are in balance functioning at high efficiency with relation to each other, to form a compact, integrated plant producing at a profit.

Pioneer offers you *more for your money* in terms of service, machinery and dependable continuous operation at a profit. Planning with Pioneer involves no obligation. An outline of your complete requirements and Pioneer's cooperation in advance planning to meet them, is the surest solution for your processing job. Plan first to Plan with Pioneer.

Pioneer
ENGINEERING WORKS
Jaw Crushers • Roll Crushers • Screens • Conveyors • Feeders • Washers
MINNEAPOLIS 13, MINNESOTA
ENGINEERS and MANUFACTURERS of QUARRY-GRAVEL AND MINING MACHINERY



Cut Cement Making Costs at the Water Line

HAVE you checked up lately on the very worthwhile reductions in fuel our American Disc Type Continuous Filters have brought about for many companies?

Fuel accounts for about 30% of the cost of making cement by the wet process. Therefore, any substantial reduction in fuel can be translated into attractive dollars and cents savings. Further, with actual and potential shortages of fuel, any saving is just so much added insurance against a forced curtailment in production.

While fuel savings alone justify the investment in the American Disc Type Continuous Filter, there are other operating advantages stemming from the feeding of drier slurry to the kilns.

An Oliver United engineer, experienced in slurry dewatering, will be glad to call and go over the latest methods and filter types with you.

Write or call our nearest office.

OLIVER UNITED FILTERS INC.

New York 18, N. Y.
33 West 42nd Street

San Francisco 11,
California

Western Sales Division
Oakland 1, Calif.
2900 Glascock Street

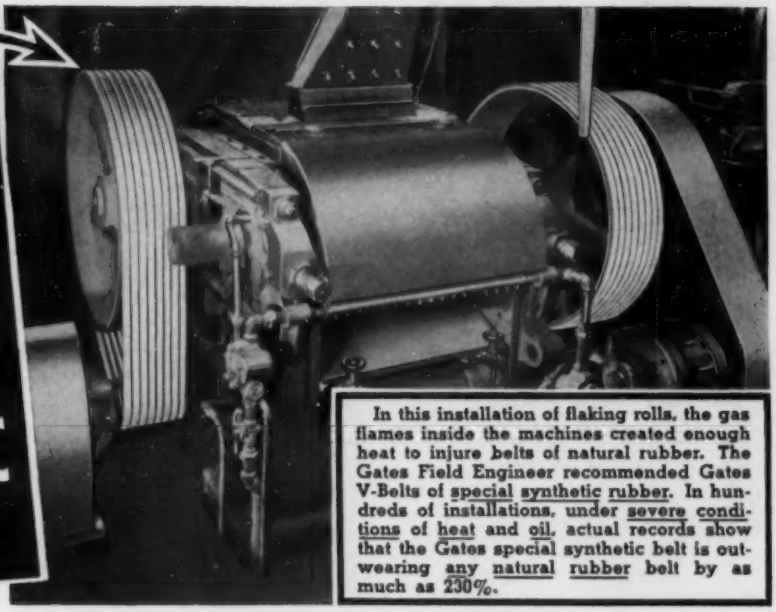
Chicago 1, Illinois
221 N. LaSalle Street

Factories: Oakland, Calif.—Hazleton, Pa.—Orillia, Ont., Canada—Melbourne, Australia

13-OUF-4

Here The Gates Field Engineer Recommended

GATES BELTS of Special SYNTHETIC RUBBER



In this installation of flaking rolls, the gas flames inside the machines created enough heat to injure belts of natural rubber. The Gates Field Engineer recommended Gates V-Belts of special synthetic rubber. In hundreds of installations, under severe conditions of heat and oil, actual records show that the Gates special synthetic belt is outwearing any natural rubber belt by as much as 230%.

He Can Tell You Whether You Need . . . .

❶ Synthetic Rubber V-Belts

❷ Steel Cable V-Belts

❸ Cotton Cord V-Belts

❹ Static-Safety V-Belts

❺ Rayon Cord V-Belts

Whenever a drive in your plant appears to be wearing belts out faster than it should—just pick up your phone and call the Gates Field Engineer.

He is a specialist in drive operation and he can quickly diagnose any trouble you are having. In most cases he can correct that trouble very easily and without recourse to using V-Belts of special structure.

There are, however, countless drives where V-Belts having special characteristics will prove to be the most efficient and economical that you can use.

The flaking rolls, pictured above, are a case in point. For more than five years now, Gates has been making special synthetic V-Belts—and the records in hundreds of applications show that, under severe conditions of heat and oil, these special synthetic belts are wearing 2 times to 2½ times as long as any belt of natural rubber.

There are other types of drives on which V-Belts with load-carrying members composed of flexible steel cables — or of rayon cords — will prove to be the most desirable application. Again, a Static-Safety V-Belt may best fit your special needs.

In any case, the wisest move you can make is to phone your Gates Field Engineer. Your telephone directory will give you his number. He will put all of his specialized knowledge and experience at your disposal—and he will always recommend the practice that will be most efficient and economical for you.

4312

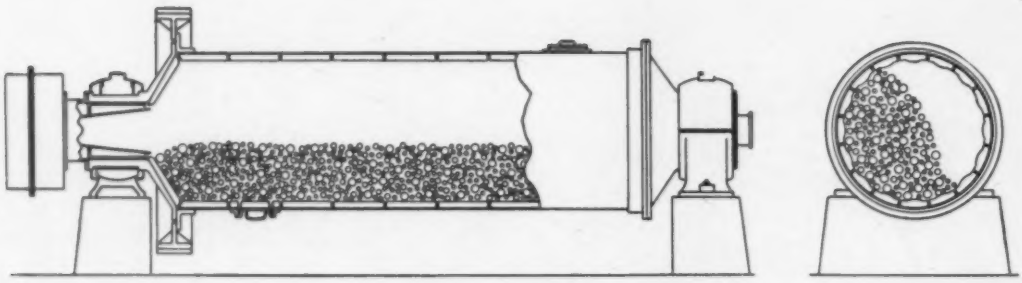
THE GATES RUBBER COMPANY

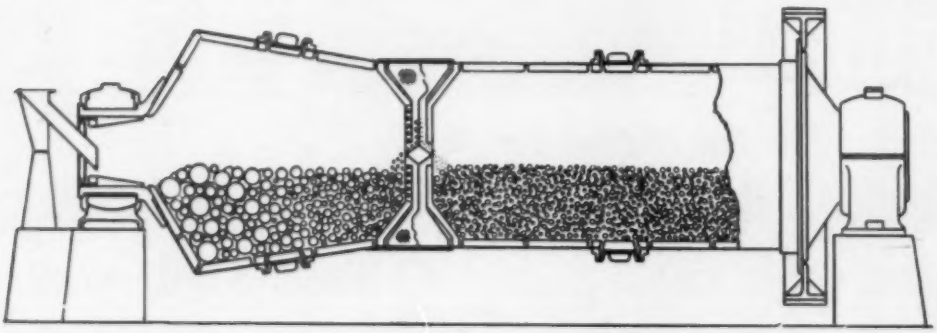
Engineering Offices and Stocks in All Large Industrial Centers

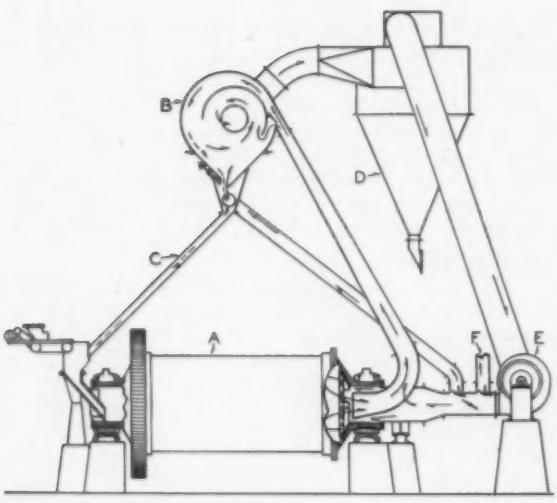
GATES VULCO ROPE DRIVES

CHICAGO, ILL. 549 West Washington
NEW YORK CITY 215-219 Fourth Avenue
ATLANTA, GA. 738 C & S National Bank Building
LOS ANGELES, CAL. 2240 East Washington Boulevard
DENVER, COLO. 999 South Broadway
DALLAS, TEXAS 2213 Griffin Street
PORTLAND, ORE. 333 N. W. 5th Avenue
SAN FRANCISCO, CAL. 1090 Bryant Street

New Hardinge Tube Mill Bulletin







Here are 3 of the 26 illustrations of Ball, Pebble and Compartment Mills found in this new bulletin.

Write for your copy of Bulletin 18-A

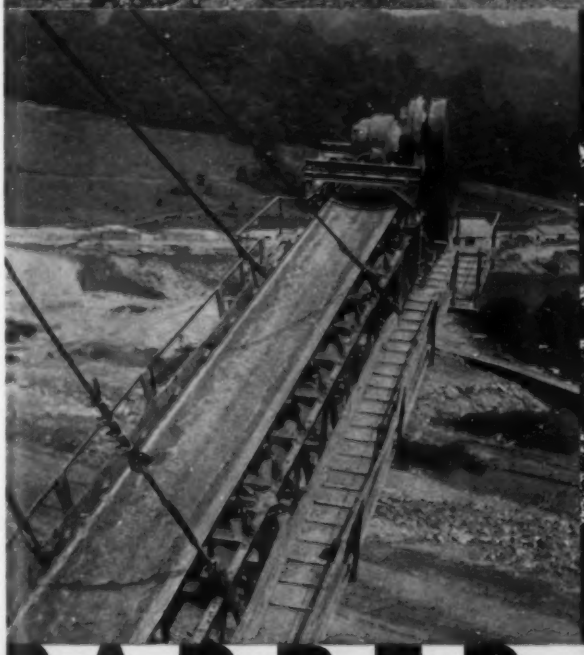
HARDINGE

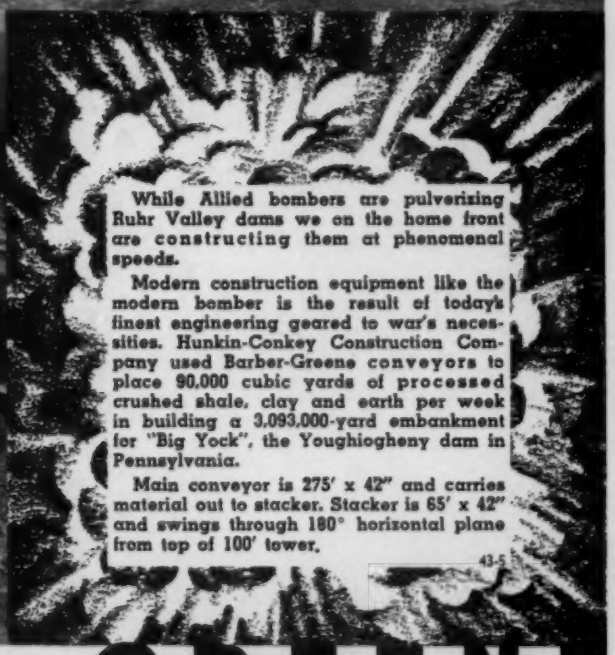
COMPANY, INCORPORATED - YORK, PENNSYLVANIA

122 East 42nd Street, New York, N. Y.
205 West Wacker Drive, Chicago, Illinois
501 Howard Street, San Francisco, California
200 Bay St., Toronto, Ontario, Canada

Block Buster

in reverse!





While Allied bombers are pulverizing Ruhr Valley dams we on the home front are constructing them at phenomenal speeds.

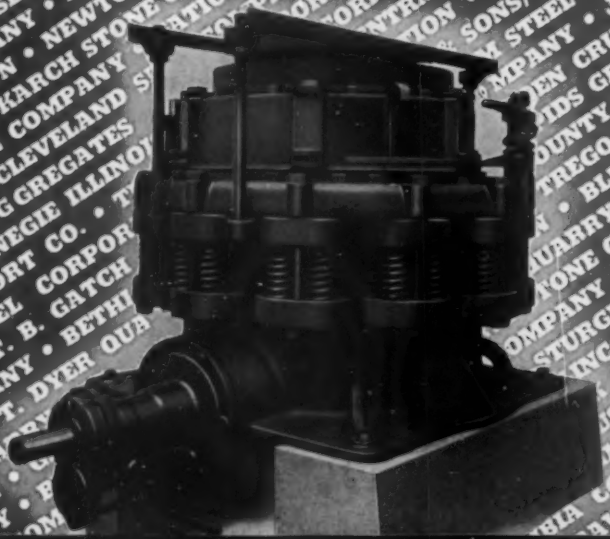
Modern construction equipment like the modern bomber is the result of today's finest engineering geared to war's necessities. Hunkin-Conkey Construction Company used Barber-Greene conveyors to place 90,000 cubic yards of processed crushed shale, clay and earth per week in building a 3,093,000-yard embankment for "Big Yock", the Youghiogheny dam in Pennsylvania.

Main conveyor is 275' x 42" and carries material out to stacker. Stacker is 65' x 42" and swings through 180° horizontal plane from top of 100' tower.

43-5

BARBER-GREENE

AURORA, ILL.



THESE PRODUCERS OF FINELY CRUSHED MATERIALS

Stone - Gravel - Slag

MAKE THEIR MINUS HALF INCH SIZES WITH

SYMONS SHORT HEAD CONE CRUSHERS

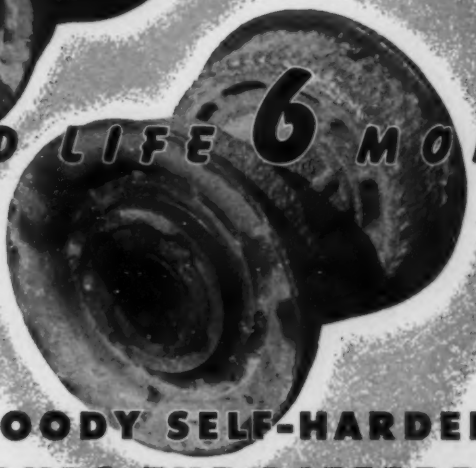
NORDBERG MACHINERY

NORDBERG MFG. CO. MILWAUKEE WISCONSIN

NEW YORK · LOS ANGELES · LONDON · TORONTO

EXPECTED LIFE 3 MONTHS

EXPECTED LIFE 6 MONTHS

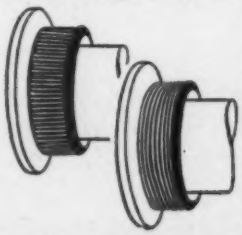


STOODY SELF-HARDENING MAKES THE DIFFERENCE!

ABOVE are two reclaimed rollers, taken from the same tractor, which are *identical in every way but one*. The upper roller was rebuilt to size with high carbon electrodes alone before being placed in service. The lower roller, also rebuilt in the same manner, carried an additional protective layer of Stoody Self-Hardening over the high carbon build-up*.

Abrasive conditions encountered in tractor operation were so severe the top roller was worn out in three months' time. The Stoody Self-Hardening, however, kept the lower roller in operation for another three-months period without attention—an increase in life of 100%!

Cost of the Stoody Self-Hardening deposit can be ignored in comparison to benefits obtained and the time saved in eliminating an extra overhaul.



Hard-facing can be applied either of two ways: (1) A bead run around the outer edge and space between the bead and collar filled in with horizontal welds or (2) A bead around the outer edge to bring the roller back to diameter, and intervening area between outer edge and collar filled with a continuous spiral of hard metal. Either method is equally successful but the latter has the advantage of more easily maintaining roller concentricity.

*The preliminary high carbon build-up can be eliminated if Stoody Self-Hardening is applied before excessive wear has occurred on the roller.

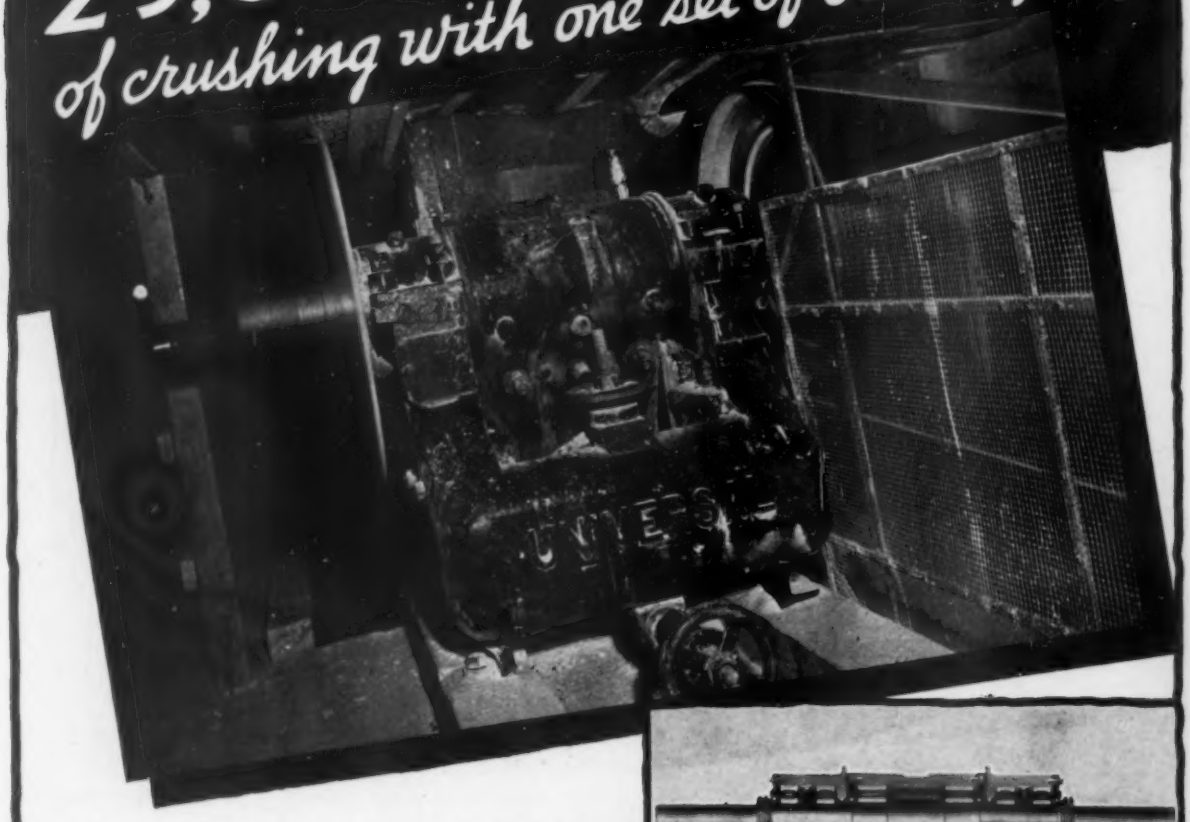
Have you received your copy of Stoody Specification Sheets? They illustrate and describe dozens of equipment-saving applications thru the use of hard-facing — sent free on request.

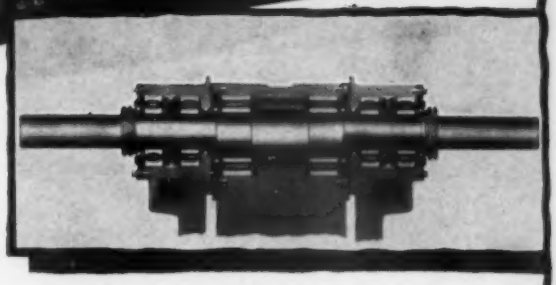
STOODY COMPANY
1129 WEST SLAUSON, WHITTIER, CALIFORNIA

STOODY HARD-FACING ALLOYS
Stop wear . . . Eliminate Repair

ANOTHER OUTSTANDING UNIVERSAL PERFORMANCE RECORD:

29,000 hours of crushing with one set of bearings!





A Universal Series "SL" Roller Bearing Crusher with 10″x24″ feed opening in the New York State plant of the Loomis Talc Company crushed 204,102 tons of magnesium silicate for war needs, representing 29,000 hours of operation, on the original set of bearings supplied with the crusher.

Proof again that Universal-engineered "6 bearing" design—two on the pitman and two on each side of the frame—*gives greater bearing service life, lower maintenance cost and increased output.*

With any rock, gravel or rubble, you can make "little ones out of big ones" faster and cheaper with Universal Crushers. Let us send you facts!

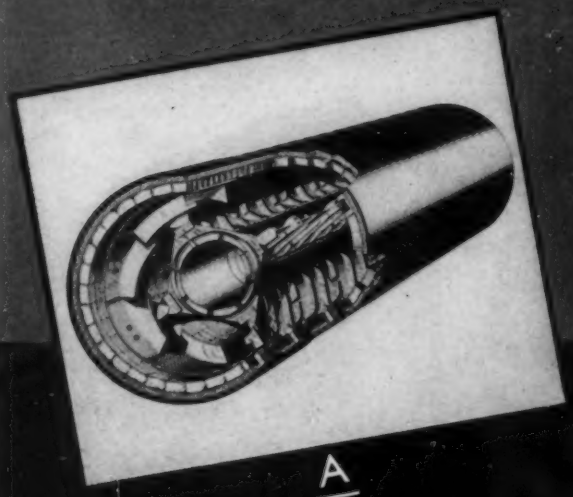
UNIVERSAL ENGINEERING CORP.
(formerly Universal Crusher Co.)
617 C Ave. West, Cedar Rapids, Ia.

UNIVERSAL

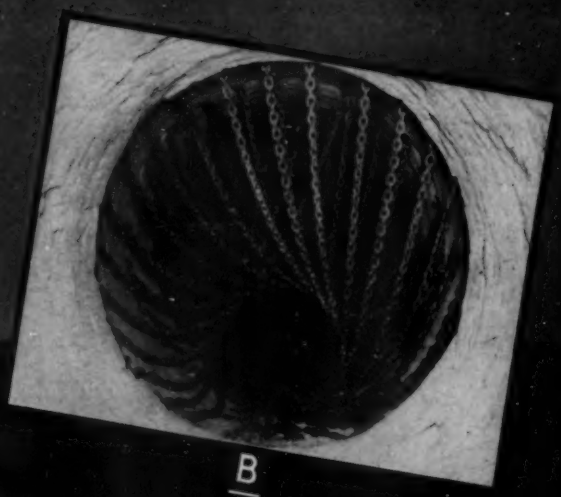
CRUSHERS, PULVERIZERS, COMPLETE PLANTS, SPREADEROLLERS, PORTABLE ASPHALT PLANTS

AWARDED ARMY NAVY FOR EXCELLENCE AND PROFICIENCY

3 WAYS TO SAVE FUEL

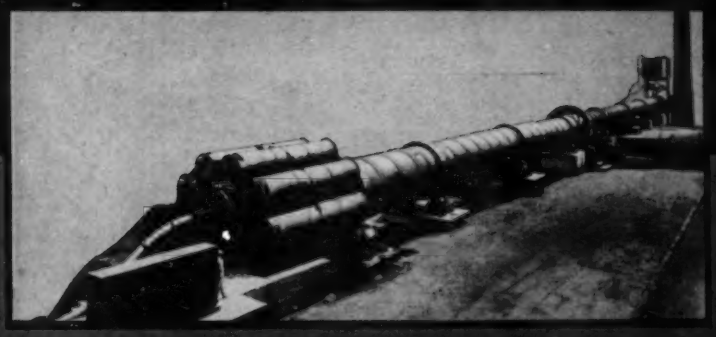


A



B

C



A
Heat Exchangers for Dry Kilns

B
Chain Systems for Wet Kilns

C
Unax Cooler Integral with Rotary Kiln

F. L. SMIDTH & CO.

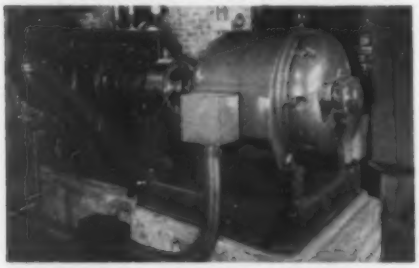
60 EAST 42ND STREET — ENGINEERS AND MACHINERY MANUFACTURERS — NEW YORK, N. Y.

Unloading and Conveying Pulverized and Finely Divided Materials from Box and Hopper-Bottom Cars

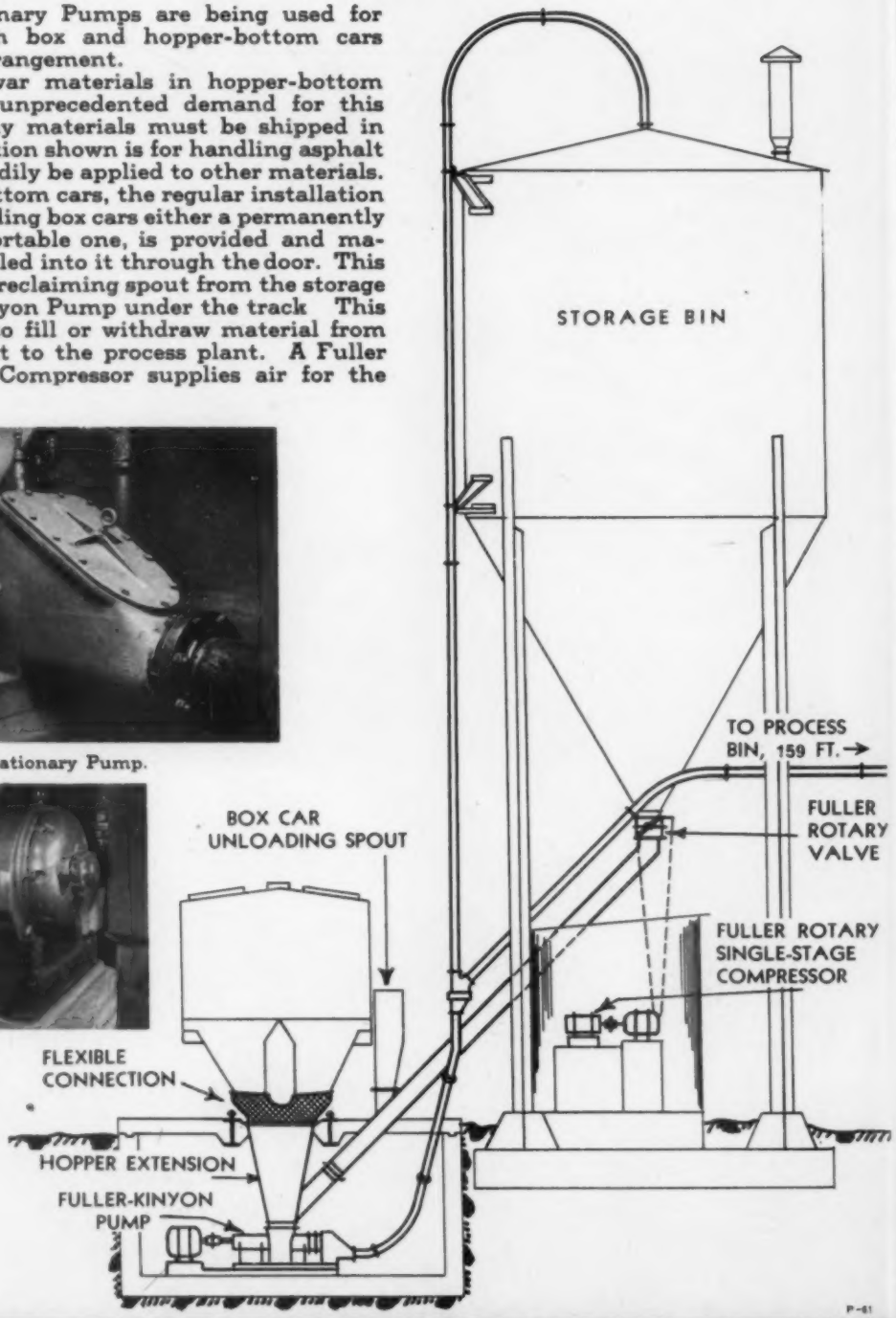
Fuller-Kinyon Stationary Pumps are being used for unloading from both box and hopper-bottom cars through a simple arrangement.

The handling of war materials in hopper-bottom cars has caused an unprecedented demand for this type of car and many materials must be shipped in box cars. The installation shown is for handling asphalt filler dust but can readily be applied to other materials. Unloading hopper-bottom cars, the regular installation is used. When unloading box cars either a permanently attached spout, or portable one, is provided and material plowed or shoveled into it through the door. This spout discharges to a reclaiming spout from the storage bin to the Fuller-Kinyon Pump under the track This pump may be used to fill or withdraw material from the bin and convey it to the process plant. A Fuller Rotary Single-stage Compressor supplies air for the conveying system.

Fuller-Kinyon Type H Stationary Pump.



Fuller Rotary Single-stage Compressor of the type used in the installation illustrated . . . air when and where needed and at pressures to do the work most economically.



FULLER COMPANY-CATASAUQUA, PA.
CHICAGO, 3 Marquette Bldg.
WASHINGTON, 5, D.C. Colorado Bldg.
SAN FRANCISCO, 4 Chancery Bldg.

9 Factors Affecting the Life of Wire Rope *(Continued)*

(This is number 18 in a series of articles prepared by Macwhyte Wire Rope Company for the benefit of wire rope users everywhere. All articles in this series are yours for the asking. Macwhyte Engineering Experience is available on specific problems.)

★ ★ ★

In the previous article of this series, the first four of nine factors affecting wire rope life or service were discussed. They were:

1. Abrasion or Wear
2. Bending or Flexing
3. Tension or Stress
4. Speed

As the article pointed out, these four can be kept from doing too much harm (to rope and machine) by frequent checkups.

While some of the four factors mentioned above are normal and to be expected, there are five other "rope saboteurs" which are *not* normal. These can be corrected. They are:

5. Crushing or Mashing
6. Weathering or Corrosion
7. Jerking or Shock
8. Vibration
9. Heat or Friction

What can you do to correct them, and thus save steel and time now so urgently needed? Here are specific suggestions.

Crushing or Mashing

Improper winding (criss-crossing) on the sheaves or drums results in crushing or mashing. It *pays* to start the rope winding properly. Keep it from criss-crossing and reduce scuffing against the flanges of the drum and against the under layer to a minimum.

Where rope is loose on the ground (on incline slopes especially) it pays to prevent trucks or equipment from running over the rope. Lubricate rollers, sheaves, and guides so as to avoid undue abrasion. When rope jumps a sheave, stop and replace it before continuing the operation.

Permanent injury to the rope and damage to equipment can result if a rope is operated while out of its proper sheaves. In clamping or fastening the end of the rope use care to avoid needless damage.

Weathering or Corrosion

Wire rope is made of high carbon steel wire and will rust and corrode if not properly protected by a suitable lubricant, especially if it is not in constant use. Proper lubrication keeps the rope flexible and reduces wear as well as affording a protection against corrosion. (See article 10 in this series.)

Jerking or Shock

If there is slack in a rope, take it up slowly before the load is applied. This is where the human element enters the picture. Many a rope is ruined for lack of care on the part of the operator. A quick pickup with as little as 12 inches of slack will more than double the load on the rope and may cause it to snap. Even if the rope doesn't break immediately, it is weakened and breaks later in normal operation. (See article 15.)

Vibration

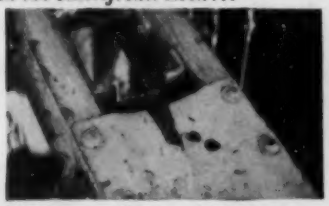
Vibration of wire rope in service fatigues the steel wires and consequently "tires" them out before they wear out. It is difficult to correct this except where this vibration is caused by faulty equipment and hurried handling. A clutch or brake may chatter and this vibration is multiplied many times throughout the length of the rope. Vibration may cause rope to break where it is dead ended (fastened). Where wire rope is fastened in a socket, continuous vibration will cause the wires to break right at the socket—cutting off a short section and refastening is a cure for this. A smooth pickup and steady operation will do much to eliminate vibration.

Heat or Friction

Heat changes the structure of steel. In general, it hardens it or makes it more brittle. Friction creates heat. Lubrication helps reduce friction. A stuck roller, a poorly aligned sheave, scuffing against wraps of rope on a drum, scraping on rock or metal creates friction and heat. Wire rope must be kept free to do its job of bending. Heat and friction will change its steel composition and cause it to break up prematurely. Where ropes travel at high speed, watch out for the effects of heat.

Not EVERY Enemy is found on the battlefront. Look...

Killed through Carelessness. Literally chewed to death, this rope was ruined before showing any normal wear.



Unnecessary Abrasion. A hoist rope was allowed to saw through a heavy plate. Such waste can and should be avoided.

Mashed to Death. Criss-crossed on the drum, this rope gave only a fraction of the service it might have, had more care been used in spooling.

Why Such Waste? This rope has been cutting a number of grooves in the bucket rim. It will give poor service and increase operating costs.

Your Wire Rope Requirements

The benefit of years of experience based upon servicing equipment similar to yours is gladly given. When you ask Macwhyte for suggestions and recommendations, you can be assured not only of getting "The Correct Rope for Your Equipment," but also a personal interest in helping *you* get the most out of *your* rope.

Feel free to consult with Macwhyte distributors, Mill Depots representatives, or write to Macwhyte Company direct.

MONARCH WHYTE STRAND PRE-FORMED WIRE ROPE

... Macwhyte's best grade wire rope, famous for its strength, toughness, preforming, and internal lubrication.

MACWHYTE COMPANY

WIRE ROPE MANUFACTURERS

ARMY E NAVY

2949 FOURTEENTH AVENUE KENOSHA, WISCONSIN

Mill Depots: New York · Pittsburgh · Chicago · Fort Worth · Portland · Seattle · San Francisco. Distributors throughout the U.S.A.

MACWHYTE PREformed and Internally Lubricated Wire Rope
MONARCH WHYTE STRAND Wire Rope
MACWHYTE Special Traction Elevator Rope
MACWHYTE Braided Wire Rope Slings
MACWHYTE Aircraft Cables and Tie-Rods

Another Northwest in ROCK

LOOK at this stuff. Here is rock that breaks the heart of ordinary operators and ordinary shovel equipment.

New Enterprise Stone & Lime Co., New Enterprise, Pa., tried Northwests out in this kind of digging back in 1939. They have since then placed two repeat orders, so you can draw your own conclusions as to how successful their first Northwest was.

If you have a real Rock Shovel you are prepared for the worst kind of digging a shovel has to do and you'll never have to worry about output in dirt. Repeat orders like these are the best evidence that after the "Duration" you will get the kind of shovel service you want from Northwest—service that will mean successful post-war contracts. Buy Bonds and watch the Northwests at work!

NORTHWEST

If it's a real Rock Shovel you won't have to worry about output in dirt

NORTHWEST ENGINEERING COMPANY
1820 Steger Bldg., 28 E. Jackson Blvd., Chicago 4, Ill.

NITRO STARCH BASE

High Explosive Efficiency

IN MINING • QUARRYING • LOGGING AND CONSTRUCTION

Plus THREE ADVANTAGES FOR YOU!

WILL NOT PRODUCE HEADACHES from handling . . . reduces discomfort from breathing muck pile fumes. Better working conditions for you and your men.

WILL NOT FREEZE or leak at Arctic or Tropic temperatures. Maintained high efficiency . . . anywhere . . . anytime!

WITHSTANDS IMPACT in high-powered Rifle Bullet Test! Greater safety for workers!

While Trojan Products today are aiding in the systematic destruction of the enemies of Freedom, we would, like all true Americans, prefer to see our products used for the purpose for which they were intended . . . in helping develop the rich resources of our Nation . . . in serving you, when peace is won.

HELP SPEED THE PEACE . . . KEEP ON BUYING WAR BONDS

EXPLOSIVES 1905 TROJAN 1944 CHEMICALS

TROJAN POWDER COMPANY

ONE OF AMERICA'S OLDEST HIGH EXPLOSIVES MANUFACTURERS

PLANTS: SEIPLE, PA. • ROBERT, CAL. • MAGAZINES STRATEGICALLY LOCATED THROUGHOUT THE NATION

OFFICES: ALLENTOWN, PA. • SAN FRANCISCO, CAL. • LOS ANGELES, CAL. • PORTLAND, ORE. • NEW YORK, N. Y.

. . . and drive even harder on the pay-roll savings plan!"

Make War Bonds the Christmas Order of the Day. Urge your workers to make their personal Christmas gifts in the form of War Bonds—and practice what you preach! Make this a 100% War Bond Christmas—to insure future Yuletides of peace and prosperity.

Make up your own posters to spread the "War Bonds for Christmas" story across your plant. Tell the story again and again on bulletin boards, in your plant magazine, and on pay envelope stuffers.

But don't forget your basic, all-important Pay-Roll Savings Plan. How's it going, these days? Perhaps it needs a bit of stoking-up right this very minute, to hold its full head of steam against the competitive demands of the holiday season.

Well, you're the man to stoke it! You can't expect it to keep running indefinitely on last summer's enthusiasm. See to it that your participation percentages, and your deduction percentages, *both* end up the year at new levels.

Every month, now your Pay-Roll Savings ought to run well ahead of the preceding month. *For so many families that formerly depended on the earnings of a single worker, now enjoy the combined earnings of several.* Such *family* incomes are doubled, trebled, even multiplied many times.

Now's the time to turn as much as possible of these increased earnings into War Bonds—War Bonds for Christmas . . . and War Bonds the whole year 'round!

GIVE THE PRESENT WITH A FUTURE—WAR BONDS!

This space contributed to Victory by **ROCK PRODUCTS**

This advertisement prepared under the auspices of the United States Treasury Department and the War Advertising Council

When SPEED is Essential

—Instantaneous Dumping Counts

Koehring Dumptors have the war speed so vital for essential military projects. As in peace-time, Dumptors are now hauling dirt and rock at high speed for the armed forces, here and overseas. Instantaneous dumping saves seconds, increases trips per hour, assures full loads every trip. All types of material are dumped clean every time. Remember the Dumptor and its many cost-cutting features, when they are again available for peace-time projects.

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MILWAUKEE • WISCONSIN

Depend on your Koehring distributor to help you keep your equipment operating. Care for your Koehring equipment NOW, so it will serve you tomorrow. Koehring distributors have genuine Koehring parts. Koehring parts warehouses are at your service.

HEAVY-DUTY CONSTRUCTION EQUIPMENT

ALL THE ADVANTAGES OF A MODERN PLANT

...at a fraction of the cost of complete rebuilding

ACCOMPLISHED IN A PLANT THAT WAS 30 YEARS OLD

The sand and gravel plant was old . . . 30 years old. Its equipment was just as old . . . antiquated, wearing out. It had been patched and repaired so often that very few of the original parts were left. But the methods, the machines, the limitations in sizes of product were just as they were 30 years ago.

Little wonder this plant was unable to cope with modern competition. Little wonder the cost of a new plant was a prohibitive expenditure. Yet, if they were to remain in business, something drastic would have to be done.

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A flow-sheet was drawn—showing the plant, its equipment and its operations. Structurally, the buildings were sound. Many of the motors still were useful. A new Conveyor here, a few Vibrating Screens there, other minor and comparatively inexpensive changes or additions in other places—and soon the antiquated establishment was transformed into a plant as modern, as efficient, as competitive as any other in the vicinity.

Instead of being limited to only two sizes of product, as in the past, it was able to turn out six different sizes. And, so flexible was this newly installed equipment that the company was able to concentrate at any time on the size or sizes then in greatest demand.

If your plant requires modernization—or should your present plant be in need of additional equipment—get in touch with Robins. The visit of a Robins Field Engineer will involve you in no cost, no obligation. For further facts, write Dept. RP-12.

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MATERIALS HANDLING MACHINERY

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Contributing Editors • VICTOR J. AZBE, St. Louis, Mo. • DR. F. O. ANDEREGG, Newark, O.

ROCK PRODUCTS

TRADEPRESS PUBLISHING CORPORATION • 309 W. JACKSON BLVD., CHICAGO

More About "Ballasting" Under Highway Pavements

THE EDITORIAL in our October issue, "Let's Build Really Good Highways," has stirred up quite a bit of comment; we might even say commendation. The correspondence has also been enlightening to the editor, who has seen many concrete pavements in the Middle West corn belt put down on nice black soil, sometimes even this "foundation" has been soaked or "puddled" as preparation for the concrete, on the theory that this would retain the curing water in the hardening concrete. From experience with concrete pavements on sandy subsoils it would appear the concrete is the better if the excess water drains out from below. In any event it has been proved that the concrete is better if the excess water is removed in some manner before the concrete hardens, as witness the famous Sioux City pavements of some 25 or 30 years ago, where the excess water was sucked out by large flat wood floats used for finishing.

Although a New Englander by birth and education, the editor hasn't been in touch with New England highway engineering practice for many years, so it is with considerable satisfaction that he learns New England highway engineers, with that conservatism typical of their locality, have continued to use subbases of sand and gravel or crushed stone all these years. And the same is more or less true of the New York State Highway Department.

In Connecticut, for example, the commissioner of highways informs us that "all their designs for concrete and bituminous macadam pavements include gravel bases in cuts and where sub-base material shows high capillarity. A gravel 'insulation' course is even placed on fills." We like that term "insulation" course. It is probably more descriptive of the actual function of the gravel than "ballast" in the case of highway pavements.

The chief engineer of the State Highway Commission of Maine writes: "I say 'Amen' to your proposition of providing rock, gravel or sand ballast under concrete pavements and under every other kind of pavement. Under concrete pavements we use not less than 12 in. of gravel base, unless conditions are unusual, and up to 2 ft. and sometimes more."

The senior highway engineer of Rhode Island recalls his training under Irving W. Patterson, chief engineer of State Highway Department for many years during and after the first federal aid programs; he writes: "Mr. Patterson was a stickler for what he termed 'adequate foundations.' By this he meant adequate foundation drainage; that no pavement surface is any better than its subsurface drainage. We have consistently operated on these principles ever since and have no cause to regret it. We have made wide use of gravel, and despite of the way it may sound (we disclaim any tendency to boast) our percentage of pavement failures on modern state constructed highways due to inadequate drainage of road sub-bases is such a small percentage of the total mileage as to be practically negligible. We are somewhat amazed to realize that there are many highway designers left who would question its validity when its need is evident. Naturally we use other subdrainage devices besides gravel such as V-drains, sub-drains, etc., but gravel is still the great mainstay."

The highway commissioners of the other states, in general, express much interest in the editorial suggestion; and in a number of instances say that this is a subject now being given intensive study. Most of them are studying the possibilities of other methods of stabilizing subgrades, such as by the use of portland cement or lime. However these materials may be used on subgrades, the concensus of highway engineering opinion seems to be that it is capillary water that does the damage, and the stabilizing should be directed to this end, rather than merely providing a hardened subgrade unless a sand and gravel or crushed stone "insulation" course is to be placed on top of this stabilized subgrade. Rightly used, perhaps, cement and lime can be made to agglomerate the colloidal material in heavy soils and prevent capillarity.

We wish our New England compatriots had been less modest and done more to educate their highway engineer brethren. Nevertheless, they are learning by experience as witness the following from the chief engineer of Minnesota State Department of Highways: "It is an extreme fallacy to assume that a concrete pavement can be used to cure inferior subgrade conditions. Minnesota has upwards of 1000 miles of concrete pavement which have been constructed 20 years or more. Most of these pavements do not carry extremely heavy traffic, but in many cases serious deterioration or failure of the slab has resulted from unsatisfactory subgrade conditions."

We have a new science of soils and extensive research on "soil stabilization," etc., but the New England Yankees kept up the practice while others were developing the theory. More power to them.

Nathan C. Rockwood

AS TIME GOES BY . . .

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● Changing times bring changing needs. The need for new and better labor-saving, conveying methods is always present. We at Stephens-Adamson have always held it primarily important not only to stay abreast of new developments . . . but to anticipate and constantly plan for them.

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WASHINGTON NEWS

W. P. B. Limits Construction

W.P.B. PART 1075, Conservation Order L-41 as amended November 1, 1943:

Typical of the language of the revised order is its introduction, explaining the purpose of L-41: "This order limits construction. It is necessary in order to conserve materials, construction equipment, labor, and transportation. In most cases, except where the construction is of a special kind, you must get permission from the War Production Board for construction."

The introduction goes on to explain that this permission is not to be confused with preference ratings or priorities: "If a construction job is allowed, either because it is not of the kind restricted by the order or because permission has been obtained, it may still be necessary to get preference ratings for the materials and fixtures which are needed. On the other hand, if you have ratings for materials, or materials on hand, you may still have to get permission to use them for a particular construction job."

In addition to simplifying the regulations and instructions, the revised order makes the following substantive changes:

1. The limit on farm construction, including residential, is placed at $1,000. Previously, there were separate limits, farm residences not being considered part of the farm unit.

2. A limit of $200 is placed on any type of construction for which a higher specific limit is not authorized by the order. This over-all limit formerly was $1,000.

3. The exception, originally made by L-41-b, for the insulating of buildings, has been liberalized in accordance with W.P.B. policy relating to fuel oil conservation. On the other hand, the exception covering the conversion of heating equipment from oil to coal has been eliminated because of the tight coal situation.

4. Minor capital additions under CMP Reg. 5 in certain of the more essential industrial plants are excepted from the L-41 restrictions.

5. In calculating costs to determine if a job is within specified L-41 limits, the cost of used materials, or the value of labor furnished free, need no longer be included.

6. Cost limits now refer to the calendar year, instead of to any consecutive twelve months period.

7. Installation of plumbing equipment rated on WPB-2631 (formerly PD-851) is permitted if the cost is under $200.

8. Schedule B, listing various kinds of construction relating to operations of farms, railroads, utilities, mines, etc., which may be begun without W.P.B. permission, has been altered in several respects. Drilling of water wells, certain radio facilities, and timber access roads financed wholly or in part by defense highway appropriations have been added.

With issuance of the revised L-41, Orders L-41-a, L-41-b, L-41-c, and Interpretation No. 1 are revoked inasmuch as their provisions are either incorporated into, or altered by, the new order.

Extension of AA-2 Rating

W.P.B. PART 3175. Regulations applicable to CMP Reg. 5: Persons engaged in the manufacture of lightweight aggregates, ready-mixed concrete, and pre-mixed bituminous concrete are eligible to use the MRO symbol and the AA-2 preference rating assigned by CMP Regulation No. 5 to obtain maintenance, repair and operating supplies. These items are included within the scope of the term "products for structural use not elsewhere listed," which appears in Schedule II of the Regulation, and which indicates businesses which may use the AA-2 preference rating.

All other aggregate producers come under P-56, as explained above.

Shell Chicken Grits—Maximum Prices

O.P.A. PART 1351. Oyster and clam shells:

SEC. 4. *Maximum prices for sales in carload quantities.* (a) The maximum price for the sale of domestic poultry and medium sized oyster or clam shells by a processor or any other person, bulk, in carload or pool car lots shall be:

Commodity:	Maximum price per ton
Dredged oyster shells	$ 6.00
Fresh oyster shells	10.00
Clam shells	10.00

plus transportation charges from production plant to the buyer's receiving point by a usual route and method of transportation.

(b) The foregoing maximum price shall be increased or decreased, as the case may be, for a like sale of other sizes or grades of oyster or clam shells by the differential prevailing in the seller's own business (or, if none, normal to the trade) during March, 1942, over or under the price for poultry and medium sized oyster and clam shells.

SEC. 5. *Maximum prices for sales of domestic oyster and clam shells by wholesalers.* The maximum price for the sale of domestic oyster and clam shells by a wholesaler shall be $2.50 per ton (maximum markup) over the maximum price which he could lawfully have paid under section 4 hereof for the lot from out of which the sale in question is made delivered at his warehouse plus transportation charges actually incurred by the seller from said warehouse to the buyer's receiving point.

SEC. 6. *Maximum prices for sales of domestic oyster and clam shells by retailers.* The maximum price for the sale of domestic oyster and clam shells by a retailer shall be $4.00 per ton (maximum markup) over the maximum price which he could lawfully have paid under section 4 hereof (or section 5 if he purchased from a wholesaler) for the lot from out of which the sale in question is made delivered at his receiving point plus transportation charges actually incurred by the seller from his receiving point to his buyer's receiving point.

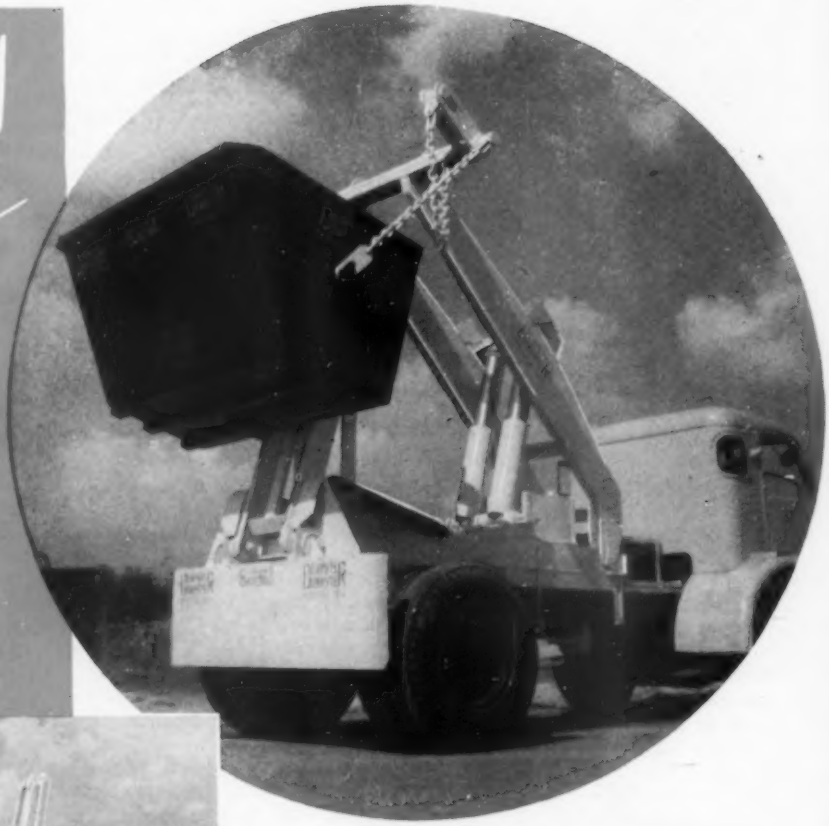
W.P.B. Field Offices Pass on Construction Projects

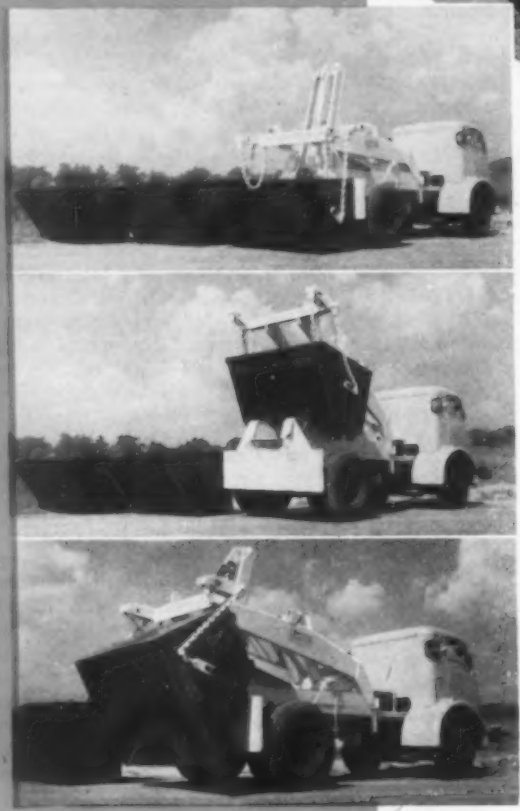
W.P.B. amendment to Order 708-20: Regional offices of W.P.B. have been authorized, effective November 27, to approve or deny construction projects involving production machinery and processing equipment when the dollar value involved is less than $10,000. The various field offices will screen the equipment requested against their records and knowledge of available equipment or facilities, and will review each case to determine whether or not an existing "E," "1" or "M" order permits the release of the item requested.

For the next sixty days, if a special release or authorization is required, and approval of the project depends to a large degree on the availability

(Continued on page 90)

Lifting 6 TONS is duck soup!





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In hundreds of industrial operations throughout the nation, many of which are essential war plants, the Dempster-Dumpster is handling extremely heavy materials—hoisting, hauling, and dumping loads of almost unbelievable size and weight. Amazing as it may seem, a Model 500 LF Dempster-Dumpster truck unit will hoist any one of several types of Dempster-Dumpster bodies containing a pay load up to 7½ Tons with ease, place it in carrying position, haul it and discharge the load automatically, or set the load down intact, while other bodies, placed at convenient loading points, are being loaded. Other models of less capacity are available for lighter requirements for handling any type of materials . . . bulky, light or heavy . . . waste, unfabricated or finished product. It's simply a matter of adapting the Dempster-Dumpster to your needs . . . with one truck and any number of bodies of various types serving your requirements.

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ABOUT THE INDUSTRY News AND PEOPLE

Organizes Mica Company

R. C. BURGESS has resigned his position as southern manager of the Colonial Mica Corp., New York, N. Y., and has organized the Burgess Mining Co., to mine mica and also mine and process other minerals for the war effort.

Governor Visits Quarry

GOVERNOR ARTHUR B. LANGLIE recently made a tour of the plant and quarry operations of the Northwest Magnesite Co., Chewelah, Wash., especially to view the new separation mill in operation.

Appointed Manager

T. F. COLLIER, for several years engaged in technical promotion work for the Portland Cement Association, has been appointed manager of Celocrete sales of The Celotex Corp., Chicago, Ill., under the general supervision of George Little, manager of acoustical and specialties sales, with headquarters in Chicago. Mr. Collier is a graduate engineer.

Named Superintendent

W. B. TOWNER, formerly superintendent of the Delaware works of the General Chemical Co., New York, N. Y., is now superintendent of the Foote Mineral Co.'s lithia plant near Philadelphia, Penn.

U. S. Gypsum Engineer

R. S. PAINTER, until recently manager for the lime division of the U. S. Gypsum Co., Portland, Ore., has been named industrial products engineer for the entire Northwest area, embracing Oregon, Washington, Idaho, Utah, Wyoming and Montana. In the new capacity Mr. Painter will represent both the Salt Lake City and Portland districts, operating directly under orders from the Chicago office, with headquarters in Portland.

O.P.A. Lime Advisory Committee

H. D. BRIGSTOCKE, vice-president in charge of sales, Thomasville Stone and Lime Co., Thomasville, Penn., has been appointed a member of the lime industry Advisory Committee of the O.P.A. Other members of the Committee are: Reed C. Bye, Warner Co., Philadelphia, Penn.; Ralph Dickey, Kelley Island Lime and Transport Co., Cleveland, Ohio; John Durrell, Hoosac Valley Lime Co., Adams, Mass.; John A. Kirk, Jr., Standard Lime and Stone Co., Baltimore, Md.; Warren Lewis, Longview-Saginaw Lime Works, Birmingham, Ala.; H. P. Mathews, Mississippi Lime Co., Alton, Ill.; B. L. McNulty, Marblehead Lime Co., Chicago, Ill.; Amos B. Miner, National Gypsum Co., Buffalo, N. Y.; Frank Sadler, United States Gypsum Co., Chicago, Ill.; Wilfred W. Sprague, National Mortar and Supply Co., Pittsburgh, Penn.; R. E. Tremoureux, United States Lime Products Corp., San Francisco, Calif.; E. I. Williams, Riverton Lime and Stone Co., Riverton, Va.

Appointments in Mexico

GEORGE P. HORN, formerly chief chemist of the Longhorn Portland Cement Co., San Antonio, Texas, has

George P. Horn

been appointed as superintendent of Cementos Guadalajara, S. A., whose plant recently was placed in operation at Guadalajara, State of Jalisco, Mexico.

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ORRIN K. FRY, formerly engineer with Johns-Manville, Inc., with headquarters at St. Louis, Mo., has been appointed chief engineer of Cementos Veracruz, S. A., Orizaba, State of Veracruz, Mexico. The new Veracruz company, a subsidiary of Cementos Atoyac, S. A., Puebla, Puebla, Mexico, has now under construction a modern cement plant near Orizaba, Veracruz.

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V. E. METCALFE, formerly divisional engineer, Puebla Tramways, Light & Power Co., Puebla, Puebla, Mexico, is now with Cementos Atoyac, S. A., in the capacity of assistant general manager. The parent Atoyac company has plants located at Puebla, State of Puebla, Mexico, and subsidiaries at San Pedro de los Pinos, Mexico, D. F., and at Orizaba, in the State of Veracruz.

Named Director

DR. HENRY G. FISK, formerly petrographer for the Universal Atlas Cement Co., New York, N. Y., and research chemist for the Calaveras Cement Co., San Francisco, Calif., has been named director of the newly-formed Wyoming Natural Resources Institute, to be operated in connection with the University of Wyoming. The purpose of the Institute will be to aid in discovery and exploitation of the State's natural resources. Immediate work will center about expanding use of meeting war needs, particularly minerals, rocks, ores and fuels which Wyoming is providing or can supply. More recently Dr. Fisk was director of the ceramics and non-metals division of the Armour Institute in Chicago, Ill.

Assigned to Foreign Service

LIEUT. W. R. BENDY, who is in the Army Air Forces as a service pilot for the Air Transport Command, ferrying ships from California to various points of delivery to combat forces, has now been assigned to permanent foreign service. Lieut. Bendy was formerly a consulting cement engineer located in Claverack, N. Y., and voluntarily enlisted in the Air Corps.

Joins Celotex Corp.

CARLETON SMITH, economist and observer of foreign business and living conditions, has been appointed assistant to the president of the Celotex Corp. Mr. Smith has had years of experience as an economist and analyst of foreign trade, as well as an author and lecturer on business and political problems. He will assist Bror Dahlberg, president of the company, in its crusade for better homes.

Heads Magnesium Sales

ARTHUR SMITH, JR., of the magnesium division of The Dow Chemical Co., Midland, Mich., has been named head of magnesium sales for the Southwest territory with headquarters in the company's St. Louis, Mo., office at Second and Madison Streets.

Commissioned Lieutenant

ROBERT C. WELLS, former keeper of the Explosives Department magazine of E. I. duPont de Nemours & Co. in the Missouri territory, and now a member of the U. S. Army's armored forces, was recently commissioned a Lieutenant while on the battle field in North Africa, the first commission issued on the field to a member of the armored force. This is the third time Lt. Wells has figured in the news since he joined the Army. First, as a sergeant in North Africa, he found himself stranded 100 miles within the German lines. Days after he was given up for lost, he made his way back to the American camp. His next experience was having an Italian general surrender to him in Tunisia.

Australian Adviser

J. N. BAYNE, vice-president, Mack-International Motor Truck Corp., New York, N. Y., has been appointed motor truck adviser to the Australian government. Mr. Baynes will be assisted by Mack field men. In his absence, W. J. FREDERICK will be acting manager of the North Jersey Division of Mack-International, while P. H. SMITH will be acting district manager of the Newark, N. J., branch. The above announcement was made by C. T. RUHF, president of Mack Trucks, Inc.

Mine Lead and Zinc

C. G. COOLEY and L. M. COOLEY, former Colorado gold miners and big sand and gravel producers, have started operations at their new milling plant and are now mining lead and zinc in the open pit near Webb City, Colo. The plant is producing zinc-lead concentrates from 15,000 tons of stockpiled ore taken from the 80- to 90-ft. levels of the mine. Carl K. Carmean is the mining engineer in charge of operations.

Joins U. S. Army

ELMER R. COATS, sales manager for Mutual Materials Co., Seattle, Wash., has been commissioned a captain in the U. S. Army foreign government management corps, and will leave shortly for intensive training in military government.

Talks About Silica Sand

J. M. TUCKER of the Buckhorn Sand Co., Sulphur, Okla., recently spoke before the Kiwanis Club on the value of the large deposit of silica sand which is found in that vicinity. He stated that there is a large demand for this sand now and that there will be a larger demand after the war in making glass articles that are now being made of other substances. Mr. Tucker also stated that there is no other place in the United States that this sand can be found in such a large deposit, for this sand was found 4- to 86-ft. deep in core drilling several hundred acres.

Associated Industries Speaker

WALLACE L. CALDWELL, president of the Alabama Asphaltic Limestone Co., Birmingham, Ala., gave a talk at the recent annual meeting of the Associated Industries of Alabama, at which Brig. Gen. Rosswell E. Hardy, chief of the artillery ammunition section of the department of ordnance of the U. S. Army, was speaker. Mr. Caldwell is a former president of Associated Industries of Alabama.

In the Navy

C. P. WERGIN, a partner of A. Wergin & Son Co., sand and gravel producers of Antigo, Wis., is now in the U. S. Navy.

Honolulu Bound

L. N. BRYANT, recently plant superintendent, Green Bag Cement Co. of Pennsylvania, Neville Island, Penn., is on his way to Honolulu, H. I., to become manager of the portland cement plant of the Hawaiian Gas Products Co. The plant is now under construction and expected to be in operation in February. It will utilize one or more of the rotary kilns of the existing lime plant. Mr. Bryant's new address will be Hawaiian Gas Products, Ltd., P. O. Box 2454, Honolulu. Victor J. Azbe, St. Louis, Mo., is consulting engineer for the company.

L. N. Bryant

Elected Vice-President

DR. PAUL D. V. MANNING, director of research, International Minerals and Chemical Corp., Chicago, Ill., has been elected a vice-president of the company, and JAMES R. BISHOP has been named vice-president of the Amino Products division. Mr. Bishop formerly was president of the American Maize Products Co. These announcements were made by Louis Ware, president of the company.

Heads University Dept.

LLOYD M. PIDGEON, whose process for the production of metallic magnesium is now in use in five plants in the United States and one in Canada, has resigned from the staff of the National Research Council at Ottawa to become professor and head of the Department of Metallurgical Engineering in the faculty of applied science, University of Toronto. He will continue to be associated in a consulting capacity with Dominion Magnesium, Ltd.

Safety Work Commended

LAMAR R. HENNESSY, a member of the laboratory staff of the Lone Star Cement Co., Hudson, N. Y., was commended recently by the National Safety Council on its weekly radio program broadcast over WJZ and other affiliated Blue Network stations, for his outstanding work in averting loss through industrial accidents.

Student Engineer

HARRY A. REICHENBACH, JR., son of H. A. Reichenbach, general superintendent of Nazareth Cement Co., Nazareth, Penn., has been employed by the Allis-Chalmers Mfg. Co., Milwaukee, Wis., as a student engineer. He is a graduate of Lehigh University.

Elected President

HENRY J. KAISER has been elected president of the Brewster Aeronautical Corp., New York, N. Y., and will now assume active management of the company. His election followed the resignation of Frederick Riebel, Jr., as president and director to accept a special assignment for the Navy.

Wolverine Moves Offices

WOLVERINE PORTLAND CEMENT CO. has announced the removal of its general and sales office from Coldwater to Kalamazoo, Mich., effective December 13, according to an announcement by Colby Stilson, New York, N. Y., chairman of the board of directors. This change was made in order to broaden the field of the company's activities and to make the company's offices more available.

This company is one of the oldest operating cement manufacturers in the State of Michigan, having been formed in 1902 to take over the assets of the Michigan Portland Cement Co., founded in 1898. The company operates two cement mills located at Coldwater and Quincy, Mich., on the sites of the original plants built in 1898. Wolverine Portland Cement Co. continues the use of marl as a raw material in the manufacture of cement, having large reserve deposits. Management officers of the company are Roger C. Gleason, executive vice-president; J. L. Nelson, vice-president and sales manager; and Jack Schaffner, treasurer.

Chile's New Cement Plant

CONSTRUCTION of a new cement plant is now under way at Juan Soldado near Coquimbo, Chile. Corporacion de Fomento de la Produccion, an instrumentality of the Chilean government formed in 1941, is constructing the plant which will have a production of 250,000 tons of cement annually. It is a wet process plant, comprising in large part the equipment of the Edison plant at Piscataway, N. J. Eight 8- x 125-ft. rotary kilns were rebuilt by Vulcan to four 9 ft. 6 in. by 8 ft. by 199 ft. kilns. Flotation will be used. It is planned to have the plant in operation about July 1, 1944.

Pennsylvania Road Bids

THE DEPARTMENT OF HIGHWAYS, Pennsylvania, has 17 bids on three road projects totaling 2.74 miles, according to John U. Shroyer, secretary of the Department. Two of the projects are access roads and one is on the 1943-44 resurfacing-reconstruction and widening program. Several other Pennsylvania projects of this type have been announced in ROCK PRODUCTS.

New Concrete Firm

LUEHRING & CO., 120 S. Chestnut street, Denver, Colo., has been formed with Carl Luehring and L. E. Crawford as owners. This company will engage in concrete contracting work, and will be affiliated with the Ready-Mixed Concrete Co., Denver, Colo.

Change in Binding

● ***WITH this issue of ROCK PRODUCTS, the binding has been changed from side stitching to saddle stitching. This will make possible a more easily read magazine, will permit wider margins with a saving in paper, and will reduce manpower requirements in printing, now acute due to the War.***

Find Big Mica Deposit

DISCOVERY of a big deposit of mica in Lancaster county, Pennsylvania, has been announced by Dr. H. M. Walters, Lancaster, Penn., dentist and geologist. The deposit is located near Schoeneck in the Appalachian foothills. Test holes have revealed sheets of mica and also quartz rock heavily impregnated with "books" of mica.

Sand Tug Sunk

OHIO RIVER SAND & GRAVEL CO., New Martinsville, W. Va., lost the 80-ft. Diesel tug "Dorothy" in a collision on the Ohio River with another boat pulling a string of barges. Three of the boat's crew were reported drowned.

Fire Sweeps Dredge

KANAWHA SAND CO., Parkersburg, W. Va., has reported through President C. Z. Ruth that a fire damaged its Diesel-electric dredge with a loss estimated from $35,000 to $50,000. Moored 200 ft. from the Ohio shore, the boat caught fire while workmen were priming one of the Diesel engines with gasoline.

Making White Sand

SPOKANE PORTLAND CEMENT CO., Spokane, Wash., is reported to be making a pure white stone sand suitable for plastering finish work. This sand is being made presumably from a limestone rock.

Reopen Old Quarry

COLUMBIA QUARRY CO., St. Louis, Mo., has reopened a quarry one mile south of Elsberry, Mo., which has been idle for several years. According to E. G. McKenna, manager, the plant will crush agricultural limestone. Included in the new equipment will be a hammer mill and ring roll mill. A dragline will be used for stripping and hauling from quarry to crusher plant will be done with trucks. This property was leased several years ago, but it was only recently that the company decided to reopen the quarry.

Barium Research

THE BARIUM REDUCTION CORPORATION has established a research project at the University of Illinois to study and investigate the uses and role of strontium compounds in the field of ceramics. Howard R. Swift has been appointed as Special Research Associate to carry on this investigation. The project is under the direction of Dr. Harman.

Start La. Lime Plant

LOUISIANA LIMESTONE CO. has started up operations in Bienville Parish, Louisiana. Limestone is taken from what is known as Rayburn Dome, a salt dome from which salt was obtained during the War between the States. The limestone lies about six feet below the surface to an estimated depth of 2000 ft. Within an 11-acre tract there is well over 2,000,000 tons of stone. Horace T. Long, plant manager, has purchased six trucks equipped with lime spreader attachments. W. Harry Johnson is president of the company.

Close Flux Stone Quarry

THE THOMASVILLE STONE AND LIME CO., Thomasville, Penn., has suspended operations at its quarry in Buffalo Run Valley, according to an announcement by Ralph Champagne, superintendent. Shortages in manpower, materials and hauling equipment were given as reasons for the action. The plant has been in operation for about two years, supplying steel mills with flux stone. This action does not affect any of the company's other operations.

Boost Phosphate Prices

AN INCREASE of approximately 20c a ton has been allowed producers of Tennessee phosphate rock to compensate mine operators for wage raises recently granted employes, states an O.P.A. announcement. The increase in maximum prices will affect sales by operators to manufacturers and will be absorbed by manufacturers. Amendment No. 3 to maximum price regulation No. 240 became effective December 3.

OPA Sand Case

WAKEFIELD SAND, GRAVEL & CONSTRUCTION CO., Wakefield, Mass., has been charged by O.P.A., in a complaint filed against its partners Edwin G. and David G. Perrott, with selling construction equipment in excess of the established maximum price. The complaint was filed in the U. S. district court by John J. Grady, district litigation attorney for the O.P.A. It was said to be the first complaint of its kind filed in this section.

Sponsors Radio Program

THE ALLIS-CHALMERS MANUFACTURING CO., Milwaukee, Wis., will sponsor weekly broadcast concerts of the Boston Symphony on the Blue Network. President Walter Geist of Allis-Chalmers announced that broadcasts will be heard every Saturday evening from 8:15 to 9:15 p.m., eastern war time, beginning on a date to be announced later.

Open Sand Pit

WOLF SAND & GRAVEL CO., Cedar Bluffs, Nebr., recently purchased the Wm. Horeis farm north of Cedar Bluffs on the river and has opened up a sand and gravel pit. It is planned to erect a permanent plant. Pumping equipment has been leased. This company proposes to sell gravel direct to farmers for road maintenance.

Buy Silica for Flux

AMERICAN SMELTING & REFINING CO. is offering a premium for silica rock containing 1.5 percent metal (presumably iron) and 75 percent silica due to the shortage of silica for fluxing purposes. The company's Tacoma smelter is particularly short of silica flux, according to a Sacramento, Calif., report.

From Cement to Stone

FORT SCOTT HYDRAULIC CEMENT CO., Fort Scott, Kans., has been loading out crushed stone at Hollister, Kans., for construction and paving purposes.

Pavement Yardage

AWARDS of concrete pavement for October, 1943, have been announced by the Portland Cement Association as follows:

	Square Yards Awarded During October, 1943
Roads	551,495
Streets and Alleys	723,618
Airports	3,233,689
Total	4,508,802

Expand Cement Manufacturing Capacity in Mexico

STOCKHOLDERS of Cementos Atoyas, S. A., at a recent meeting, held in its general offices at Puebla, Puebla, Mexico, decided to increase the capitalization of that company from 3,000,000 pesos to 5,000,000, and to issue 1,500,000 pesos in preferred stock and 2,000,000 pesos in bonds.

The object of the increase in common stock, preferred stock and bonds in the Atoyac company was twofold. Cementos Veracruz, S. A., a subsidiary of the Atoyac company has recently been formed, and this new company is now enaged in building a cement factory at Orizaba, in the State of Veracruz. The State of Veracruz is one of the major markets of the parent Atoyac company, and a factory situated in that region not only results as a benefit to that section of the country as a whole, but does a great deal towards helping to alleviate the present railway transportation crisis brought on as a result of the war.

Dry Process—Waste Heat Boilers

The Veracruz cement factory will be a strictly modern plant operating on the dry process in connection with waste heat boilers to supply its own power requirements. Due to the existing power shortage throughout Mexico, existing cement factories have their power requirements cut by as much as 20 percent during the three or four dry months of the year, and since there is a considerable shortage of power during the remaining wet months of the year as a result of insufficient hydro-electric generating capacity and the impossibility for the present of acquiring either hydro-electric or steam plant equipment, the Veracruz plant of necessity found it necessary to have its own source of power.

Capacity Will Be 6000 Metric Tons Monthly

A minimum capacity of 6000 metric tons of cement monthly is planned for the new plant, which initially will have two kilns. All plant equipment and machinery, as well as that to be used in the limestone and shale quarries, will be modern. The new company also will operate a short railway system between quarries and plant.

Cementos Veracruz, S. A., will be capitalized at $5,500,000 Mexican currency, and form a subsidiary of the parent company, Cementos Atoyac, S. A.

Parent Company Expands

Cementos Atoyac, S. A., at the present time is undergoing a major expansion program at its main plant at Puebla, Puebla, Mexico, and at the year's end will have a modern four kiln plant. In addition to the main plant at Puebla which produces exclusively the Atoyac type of Portland-Pozzolana cement, this company also operates a small one kiln plant adjoining its main plant which produces the Plastocement and Caloyac types of masonry cements. Plastocement, S. A., another subsidiary of the Atoyac company with plant at San Pedro de los Pinos, on the outskirts of Mexico City, also produces the Plastocement and Caloyac types of masonry cements. The new Veracruz plant will at the start produce standard Portland cement, though provisions have been made to permit of the production of Portland-Pozzolana and masonry cements at a later date.

Buy Equipment from Marquette

Arrangements have been made by Cementos Veracruz, S. A., with the Marquette Cement Manufacturing Co., Chicago, Illinois, whereby the latter company, in addition to becoming a stockholder in the Veracruz company, will assist in the design, construction and operation of the Veracruz plant. The Marquette company operates a number of large cement plants at La Salle, Illinois, Cape Girardeau, Missouri, and Des Moines, Iowa, their plant in Des Moines being considered as one of the most advanced and modern in the world. Walter A. Wecker, president of the Marquette company, will be on the board of directors of the new Veracruz company. Julio Lacaud, president of Cementos Atoyac, S. A., will head the new Veracruz company. Management of the Veracruz company will come under Alton J. Blank, general manager of the parent Atoyac company. Other officials include Virgil E. Metcalfe, assistant manager of the Atoyac company; Rutland Levanger, who will be chief engineer of the Veracruz company; Charles E. Phillips, who will be superintendent of construction.

Letters to the Editor

"Let's Build Really Good Highways"

Sir: I was very pleased to read your editorial in the October issue, and hasten to send you my congratulations and a very definite concurrence of opinion.

There is no doubt as to the correctness of your statement, that for many years we were "mileage mad." I have actually sat in on conferences where highway executives would tell their engineers: "Here, Jim, is $200,000, now go build a road from Podunk to Squirtville." No respect was given to the topography or the cost of a well designed, modern highway. It was simply a matter of spreading the minimum number of dollars over the maximum mileage.

Now that we are giving so much attention to the importance of post-war highways as an economic necessity, as well as an avenue to alleviate unemployment, I believe it is vitally necessary that very serious consideration be given to this outstanding problem. Of course, there are many other troubles which should also be solved but drainage is without doubt "Exhibit A" in highway design.

Highways should be treated like a human being. Even if you and I were dressed up in our white tie, tails, a facial and a plug hat, and then stood in a foot or so of water, you may be assured we would be headed for a bit of trouble. It also proves the old adage that "no matter what appears on the face, it is really what is underneath that counts."

I was also impressed with your use of the word "dis-service." It was certainly a square peg in a square hole —which is unusual these days.

PAUL B. REINHOLD

Pittsburgh, Penn.
October 26, 1943.

[Mr. Reinbold is vice-president of the American Road Builders' Association.—The Editor.]

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Sir: Your editorial in the October issue deserves not only the highest praise, but also the most careful consideration. I am heartily in accord with your statement of facts and opinions.

You have touched upon a serious mistake in the present design of pavements. We have probably not forgotten that drainage is important, but we have attempted to avoid the water problem by trying to build water-proof surfaces over bases and sub-bases that are susceptible to fluctuations in volume and supporting strength with changing water contents. The surfaces have been imperfectly water-tight at best, and in the rigid types of pavements, the access of water is easy at the vulnerable points, namely, the edges and joints, permitting the types of failure which are common to all observers. Moreover, water has gained entrance by capillarity through the soil beneath, or from the shoulders, and no provision has been made to adequately drain such moisture when once admitted to the substructure.

You have made the comparison between designing highways and railroad ballasted tracks. I would like to carry the analogy still further. A properly ballasted track has first of all sub-ballast of fine granular material, usually limestone screenings where these are available. On this sub-ballast is laid the ballast proper, which consists of open, easily draining gradations, with the surface and sides entirely exposed to the elements, but by virtue of the openness of the aggregate, permitting free drainage and aeration of the mass. Furthermore, this ballast is unconfined, but after the consolidation, by tamping and picking, the open aggregate is amply sufficient in supporting power to carry tremendous loads at high speeds and under intense vibration for long periods of time. When such ballast fails there is usually only one condition causing it, namely, the voids have become clogged or choked with fine material, thus preventing free drainage and promoting pumping. All that is necessary to restore this ballast to its proper functioning power is to relieve it of the fines in the voids of the large aggregate pieces.

All of us have observed the following situation during conditions of flood and high water. Highways become impassable, even for moderately loaded vehicles, because of the failure of the wet bases to support adequately even these light loads. Parallel to these roads are railroad tracks, perhaps awash with flood waters, but over which heavy trains are running, imposing loads we would not dare permit on our highest type pavements even under ideal conditions. We may well ask "Why this difference?" The answer is that railroad tracks are ballasted and sub-ballasted to provide ample supporting power when the track is wet or dry. No attempt is made to prevent the water from going into the structure, but ample provision is made to let it get out, with additional aeration provided.

In recent years, our attention has been drawn so sharply to stabilization by means of finely graded materials that we have apparently lost sight of the fact that strong supporting structures can be made with open graded coarse aggregates, provided they rest upon a substantial sub-base, such as limestone screenings. We have attempted to go to the limit in making a structure impervious to water, rather than deliberately making the mass pervious, with the knowledge that it will cure its own condition of wetness thereby.

There is nothing impossible or even difficult in transposing the railroad ballast and sub-ballast idea to the supporting structure of primary highway surfaces. A compact layer of limestone screenings, followed by a compacted layer of open aggregate, will provide certain support as well as freedom from dangers due to moisture under the pavement. For a number of years I have knocked at the door of highway departments with the hope of getting such a structure introduced under a high class surface. Within the past two years, the Ohio Department of Highways has constructed a widening pavement job along these general lines for the shoulders and widened areas in a region near Lake Erie, where water conditions have been constant and highly troublesome. While it is yet too early to judge how much good will be accomplished from this method of construction, there is every reason to believe it will prove satisfactory.

Some fifteen years ago we released in a technical paper from our laboratories some tests in which the bases and binders of bituminous surfaces were varied to determine the supporting power they exerted, while the whole specimen was being tested to failure under moving wheel loads. We found that the supporting power of compacted dry coarse aggregates as a binder course was greater than any other, except a solid portland cement concrete base, and approximately equal to the latter.

My compliments to you again for a very good statement in a worthy cause.

HERBERT F. KRIEGE, Ph.D.

Toledo, Ohio,
October 25, 1943

[Dr. Kriege is technical director of the France Stone Co. Laboratories and one of the foremost research specialists on highways and highway materials.—The Editor.]

Power for a Drag Scraper

AT A GRAVEL PLANT in Wisconsin, an old farm tractor was used to furnish the operating power for the drag

Old tractor engine drives hoist operating drag scraper

scraper in the pit. A tractor engine was removed from its wheel assembly and mounted on a framework beside the two-drum hoist of the drag scraper. Power was obtained from the power take-off of the tractor to operate the hoist directly. Even the old seat from the tractor was mounted on blocks beside the drums for use of the operator. The installation has proved successful for this operation notwithstanding the fact that the pit is quite large and the material is brought from a distance of several hundred feet with a good-sized scraper bucket. This idea may be found useful today when it is difficult to obtain power equipment.

Belt Conveyor Tunnel

LONG DISTANCE transportation of bulk commodities by belt conveyors is going to play an important part after the war. In the industrial sections the passage of such long belts either over or under previously existing highways will have to be considered.

Concrete tunnel for belt conveyor passage way under state highway

National Cement Company, Birmingham, Ala., had such a problem and solved it by going under the highway in a simple, low-head tunnel as shown in the illustration.

A Safe Circular Saw

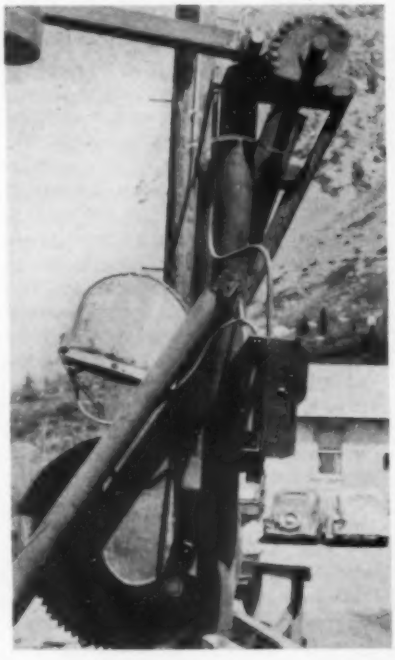
A CIRCULAR POWER SAW is a very efficient and economical piece of equipment around any rock products plant, and in many cases can be built by the local mechanical department.

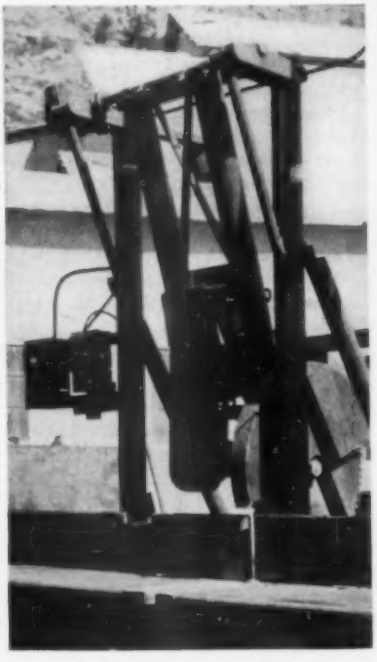
The swing type is perhaps the most common and is usually provided with a balance or counter weight suspended by means of pullies and wire rope. In time the wire rope wears out, and, is very apt to escape notice and when the wire rope breaks it is very dangerous to the operator.

At a western operation a gear-cam and gear has been provided to replace the wire rope counterweight as shown in the illustration. Both the gear, and the cam-gear were made in the local shop. This arrangement is safe and fool-proof and with the extended counterweight is an easy saw to operate.

It is also worthy of note that the main pieces in the assembly were made from pieces of pipe and arc welded. The vertical supports are 6-in. iron tubing. The deck is 16 ft. long by 24 in. wide, and is provided with four steel rollers, equally spaced. The top of the deck is of steel plate.

The drive for the saw is by means of a 7½-hp. electric motor and uses fine strands of Vulco-Gates "V" belts. The mandril supporting the





Left: Close-up of circular power saw with a cam and gear arrangement to support counterweight. Right: Power saw frame comprises pipe sections welded together

saw uses Timkin roller bearings. The saw is 32 in. in diameter and runs at 1100 r.p.m., there being a 5-in. pulley on the motor and a 8½-in. pulley on the saw mandril. The motor is mounted on an adjustable shelf on the swinging arm and is provided with push button controls. Two saws are provided, one which is used for cutting scrap timbers into fire wood and the better saw for framing timber. The saw is provided with a removable guard for safety considerations.

Making Whiting

THE U. S. LIME PRODUCTS CO. has made some improvements at its Sonora, Calif., plant for the manufacture of whiting. A high-side, Raymond

High-side mill making whiting

impact pulverizer mill was installed with fan and dust collecting system for preparing whiting, but the mill can be used for grinding lime or other products, if desired.

The whiting made at this plant is ground from a very white limestone to a fineness of 99.8 percent minus 325-mesh for the higher grade material. One feature of this installation which is not generally known is that the whizzer separator will cover a fineness range never thought possible with the older separators.

Grinding the Sonora limestone, the slowest speed of the whizzer drives shows oversize on 65-mesh, whereas the highest speed gives a product better than 99 percent minus 325-mesh, with practically no oversize on the 200 mesh. This fineness can be stepped either upward or downward by using more or less whizzers within the separator. The range can also be increased by changing pullies on the Allis-Chalmers variable speed transmission. The net result is that the Sonora plant can start at from 30 to 40-mesh and make products from there on up to as fine as any whiting produced. A 60-hp., 1200 r.p.m. motor with a standard V belt drive gives the mill a speed of 345 r.p.m.

Loading out conveyor bridge over tracks and chutes. Note water tank at top of tower to the left which is used to supply rinse water to loaded gravel trucks

Making Use of Old Conveyor Belt

PIECES of used conveyor belts are commonly used for rubber lining. These are secured in place with flat head elevator bolts. These bolts should be located at points of minimum or no wear and the belting suspended over the surface to be protected. Where a water tight chute is required the belting may be rolled into place over ordinary black roofing cement.

Novel Method of Loading from Stockpile

IN THE ILLUSTRATION is shown an interesting arrangement for loading cars from stockpile. A belt conveyor, 90-ft. centers, can be seen in the background. Trucks dump gravel into the underground hopper from which it is fed out to the conveyor that carries the material to the gate-controlled chutes. Material also is carried to the steel distributing structure above the tracks by the two larger belt conveyors shown in the illustration.

At the top of one of the steel towers may be seen a 500-gal. steel tank which supplies a low pressure stream of water through 4-in. pipe, extending horizontally to the left and about 10 ft. above the ground. Trucks back up under this pipe and the load of gravel is given a rinse before it leaves the yard.

Problem Solution Asked!

● *A FRIEND in the South Pacific asks the help of our readers in solving what appears to be an unusual problem. If you know how to solve it please write in and we'll pass it along—and publish and pay space rates for it too!*

The problem is to pump about 70 tons per day of fine ocean beach sand, from the beach in front of the works, a distance of approximately 1000 ft. with a lift of 50 ft. So far simple, isn't it? However, owing to very rough weather here at times, and lack of shelter, a pontoon or float would be a great deal of trouble.

The tide comes in and covers the sand, which is very fine and also wet. It would be possible to pump from the beach exposed at low tide, or to build a pump house below low tide. Here are the questions the correspondent would like to have answered:

(1) What if any device need be employed at the end of the suction inlet to ensure the proper mixture of sand and seawater?

(2) How can the suction inlet be moved about as the sand level is lowered, for the time being, until fresh sand is washed in?

(3) How many men would be required to look after the installation?

So there's your chance to show your ingenuity?

—THE EDITORS

Self-Priming Pump

ALLIS-CHALMERS MANUFACTURING Co., Milwaukee, Wis., has announced its Type AO self-priming pump which is equipped with an improved auto-

Improved automatically controlled valve is an important factor in the quick and effective self-priming action of this pump

matically controlled valve. The design and operation of this valve is an important factor in the quick and effective self-priming action of the pump.

Priming of this pump is accomplished as the motion of the water throughout the pump runner and the volute passage carries behind it a slug of air, drawing air in the suction passage through the impeller and out through the priming chamber. This hydraulic action lifts the column of water in the suction line and achieves the same results as would a separate vacuum pump. The priming valve closes slowly during this process, acting against a spring tension which governs the rate of priming and the static height of the priming suction lift. The automatic closing of the valve after complete priming prevents water from bypassing back to the suction chamber, with resultant power loss. The pump impeller has an unusually thick vane with rounded inlet edges, permitting the pump to pass stringy materials and fairly large solids.

Manufacturing plans include a complete line of the self-priming Type AO pump, from 1 to 6 in. size, although only 2-in. and 3-in. sizes are ready for immediate sale. The entire line of pumps will range from a very small capacity to 1400 g.p.m. and up to heads of 100 ft. or over. The self-priming device incorporated in these pumps is also adaptable to use with other pumps, particularly the single suction type.

Portable Crushing Plant

IOWA MANUFACTURING Co., Cedar Rapids, Iowa, has announced its Cedarapids Master tandem portable crushing plant. It has overall traveling dimensions of 33 ft. 5 in. for the length, 8 ft. for the width, and it is 12 ft. 10 in. high. Power transmission is through multiple V-belts, universal shafts, and enclosed oil-bathed gears. From 125 to 150 hp. is required to operate the plant at peak capacity.

In this plant a 30 in. by 50 ft. conveyor drops material to a 30-in. feeder, which delivers it to a 48 in. by 12 ft. double-deck horizontal vibrating screen. Largest oversize goes to a 10- x 36-in. jaw crusher. Next oversize moves to a 20- x 40-in. roll crusher. Fines fall through to a sand conveyor and graded aggregate to an aggregate delivery conveyor. Material from roll and jaw crusher drops onto a 24-in. conveyor, 14-ft. centers, which carries it to a raff wheel for elevation to a 24-in. conveyor, 25-ft. centers. Crushed material is then returned to the double-deck vibrating screen for grading.

Primarily a gravel plant, it can be used for quarry work by placing a primary crusher ahead of the master unit. By adding sprays, washing screen, and settling tank, the unit becomes the heart of a complete crushing, washing, and screening plant.

Screw Classifier

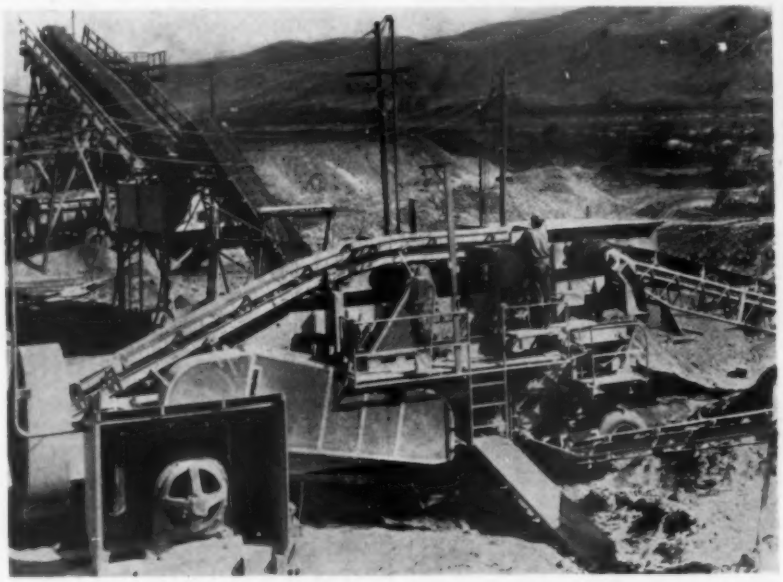
WESTERN MACHINERY Co., San Francisco, Calif., has developed the screw classifier shown in the illustration which, in addition to classifying ma-

Screw classifier is designed for effective operation under varying conditions

terials in wet grinding processes, is used effectively for desliming and dewatering, washing and sizing. The action of the screw imparts a continuously-applied pressure to the sands, accelerating the separation or dewatering. Both fine and coarse separations may be made. Wearing shoes attached to the helix are quickly changed.

Adjustable V-Belt

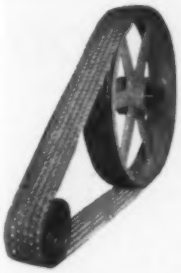
MANHEIM MANUFACTURING & BELTING Co., Lancaster, Penn., is manufacturing the Veelos belt which is adjustable to any length, and is said to be adaptable to any drive but is particularly applicable where a V-



Large capacity portable screening and crushing plant

belt drive is generaly desired.

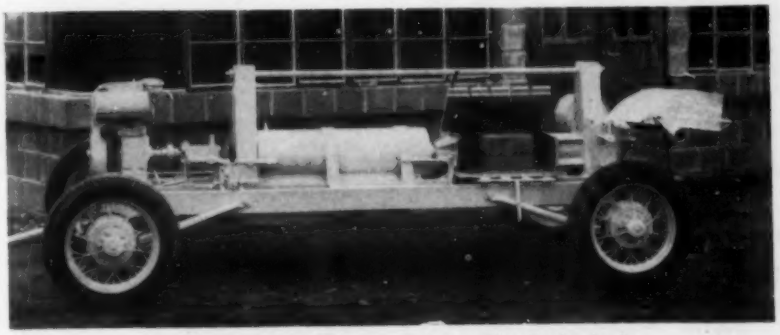
The belt is of a flexible, laminated construction which is said to give uniform distribution of the load on all strands through equalized tension. It also may be run upright or on its side on the flat pulley. However, to keep the Veelos V-belt running on its side, it must be run in the opposite direction from that suggested for standard installation. When run in the upright position, the segment points provide efficient traction and protect the rivet burrs. There are two types of belt; the regular, general purpose type, and the oil-proof type.



Belt drive of flexible, laminated construction

Earth-Concrete Block Machine

THE UNGE EXPORTERS, Topeka, Kans., have placed on the market and are primary contractors for the Davis patented Terracrete block machine, made by The Davis Terracrete Block Machine Co., Lawrence, Kans. Going back to the old adobe fundamentals of building construction, the machine utilizes local soils mixed with about 10 percent of cement to produce a building block. In the construction of a building several years ago, this machine was taken to the building site, the top soil was scooped up, screened and mixed with 10 percent cement and 30 percent sand. The percentage of sand and cement is determined by analysis of the type of soil aggregate to be used.

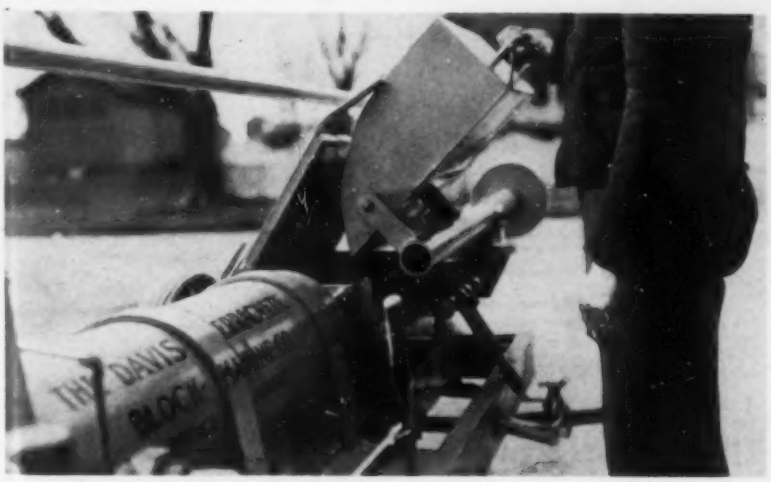


Portable block machine mounted on rubber-tired wheels

The block machine comprises a steel frame on which is mounted a motor, pump, compressing unit, mould, and the weighing and loading device. A 5 hp. Wisconsin motor drives the rotary type, hydraulic pump which operates the hydraulic press that exerts a pressure of 1000 p.s.i. through a plunger, the head of which forms one end of the mould. The compression box or mould is made from one-inch steel plate and forms a mould for the block. The loading and weighing device is a pivotal arrangement with an adjustable weight on one end and a hopper or charger on the other end of the bar.

Preparations of the soil-cement-sand mix include screening to remove clods and the use of a mixer of the concrete type having a capacity of about 6 cu. ft .or more to insure continuous operation of the block machine. Water is added to bring the moisture content to approximately 7 percent.

In operating the block machine, the hinged side of the moulding box is latched into position. The hopper is swung over the box and the weighed material is emptied in the mould. The hopper is then pushed out of the way, the lid is closed and locked with the lever. Now the hydraulic press is started, causing the front end of the box or plunger to move into the mould box and compress the confined material. As the friction increases against the sides of the mould box, it causes this box to slide on the rail over which the box is mounted, thus giving the same action as if there were a plunger pressing from both ends. This is said to create equal pressure and cause the block to have uniform density. The capacity of the machine is about 70 blocks per hour.



Loading device for soil-cement being dumped into mold

New Synthetic Rubber

UNITED STATES RUBBER CO., New York, N. Y., has announced a new synthetic rubber, the sixth major type to be discovered through chemical research. Known as Uskol, this new synthetic will be used in both industrial and household products. It offers a high degree of resistance to solvents, such as fuels, oils, gasoline. The new product will also be used for industrial molded items, including tubing, gas and oil hoses, tank linings, etc.

Electric Vibrating Equipment

THE JEFFREY MANUFACTURING CO., Columbus, Ohio has brought out a 176-page catalog, No. 750, this year which contains a very complete description of the company's complete line of electric vibrating equipment for material handling and processing operations. Complete specifications are available for each piece of equipment with typical application drawings and actual installation photographs.

Latest Developments in

Power Generation and Transmission

By NATHAN C. ROCKWOOD

Northampton plant of Universal Atlas Cement Co. has several unusual features for a cement power installation. This article completes the story on this plant described in detail in the November issue of ROCK PRODUCTS

THE POWER-GENERATING and distribution units of the new Northampton plant of the Universal Atlas Cement Co. are in keeping in up-to-the-minute developments with the rest of the plant. The power plant now contains but a single 6250-kva., 3-phase, 60-cycle, 2400-volt turbine generator unit. Another will be added when the war is over or priority restrictions raised.

The waste-heat boiler plant is different from most of those installed at cement plants in that every kiln and boiler is a single and distinct unit with no cross-connections or common flues. The reason for this is because it was recognized that this is a cement plant and it is designed to make quality cement with a maximum of efficiency, with steam as a by-product only. Naturally, if a kiln is down, the boiler is out, or vice versa.

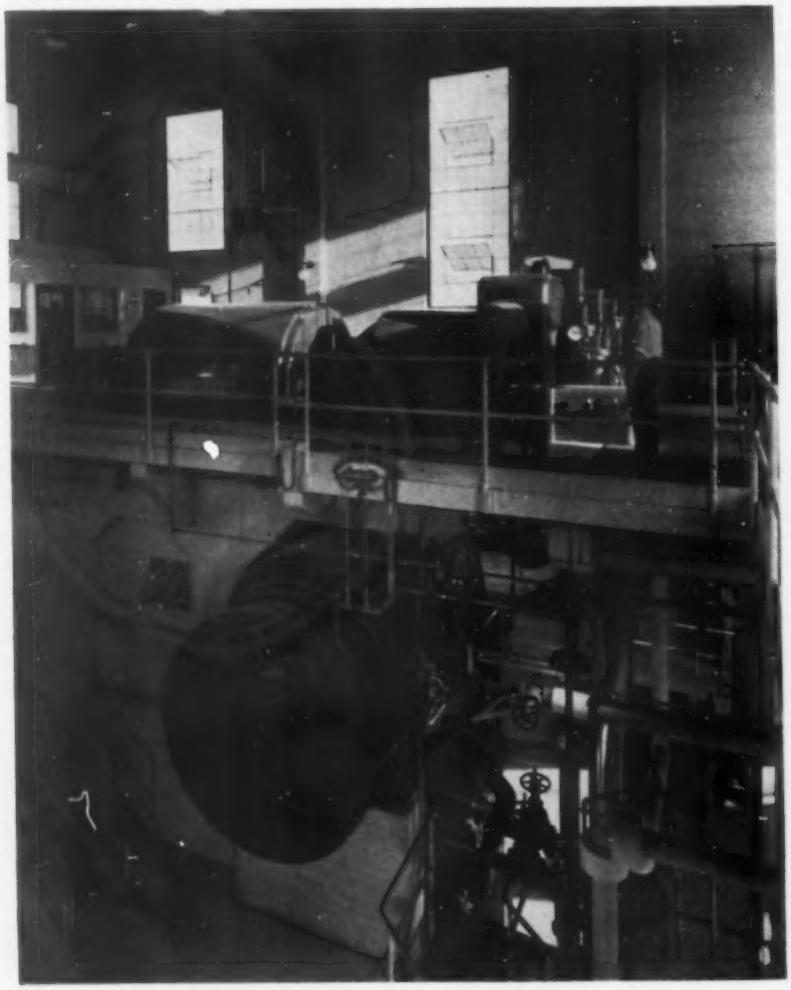


Fig. 59. Turbine-generator unit in power plant

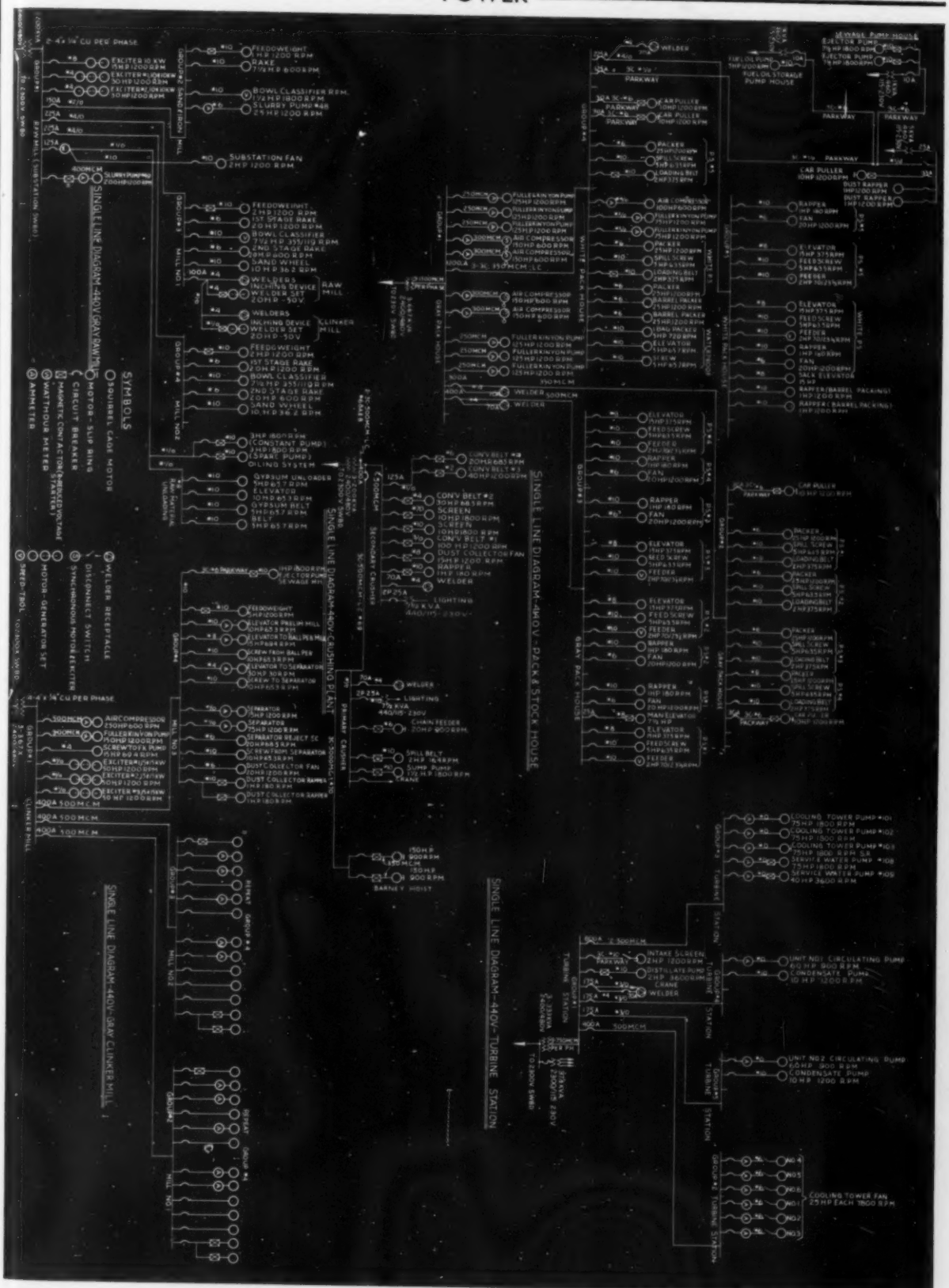
The necessary flexibility in steam generation is supplied by an auxiliary boiler fired with anthracite culm by a mechanical stoker. The anthracite culm is pumped into the stoker feed bin as received by an airveyor type of pump, which handles coarser material than the standard cement pump. The auxiliary boiler can make enough steam at 250 lb. sq. in. to operate one turbine generator unit, which would supply enough power for many of the normal plant units, although of course not all. During the period the plant has only a single generator unit it purchases local electric power.

As noted from the plan of the plant (November issue, pp. 46, 47) and the introductory article, the turbine-generator units are some 700 or 800 ft. removed from the waste-heat boilers in the end of the kiln house. The engineering problem was one of pumping 17,000 g.p.m. from the creek for condenser cooling water, or putting the power plant on the creek and piping the steam to it. It is said that the latter alternative is much the more efficient.

The steam-main gallery also carries water and cement lines as well as power cables. It gives a warm dry walkway most of the length of the plant. It, as well as all corners of the plant, is exceptionally well lighted at all times.

Flue dust is collected so far as possible before it gets to the stack and a cement-type pump removes this dust to a disposal dump removed from the plant. Provision has been made to add this dust to the kiln feed when and if this is desirable, as explained in the article on kilns and kiln controls. In fact, the dust collected in the economizers may be added separately and the flue dust wasted.

The electric-power control room or substation is in a monolithic concrete building alongside the mill building. Current received here at 2300 v. is controlled through vertical-lift, air-break type, with magnetic



Mill and pack house electrical distribution system; 440-volt single line diagram

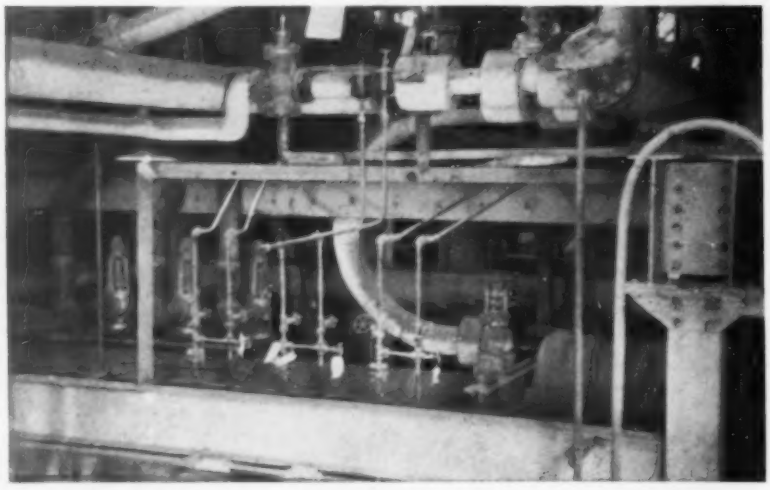


Fig. 60. Looking over tops of waste-heat boilers from the filter-room floor

arc suppressors, switch gear. The switches themselves are entirely enclosed in cabinets behind the control boards, so that there are wide, free walkways on both sides. The air-break type switch is the most modern kind supplanting the oil emersed type for this kind of service. The switches are opened and closed in an air tank.

Under the switchboards is a concrete tunnel which contains all the power cables for the entire plant. The switchboards have ammeters and voltmeters and other control instruments on all main lines to the quarry, crushing plant, mill motors, etc. All switches are interlocked so that starting of machinery must be done in sequence. The 2300-v. a-c. current is transmitted to the synchronous motors on the mills, which operate on 2300-v. and to eleven transformer banks located at convenient points about the plant where the current is stepped down to 440-v. on which most of the machinery motors operate. There are also transformers for lighting circuits at 110-v.

Also in the substation are the motor-generator sets for supplying the direct current for kiln motors and

Main power distribution lines to quarry, mills, kilns, and packhouse; 2300-volt single line diagram

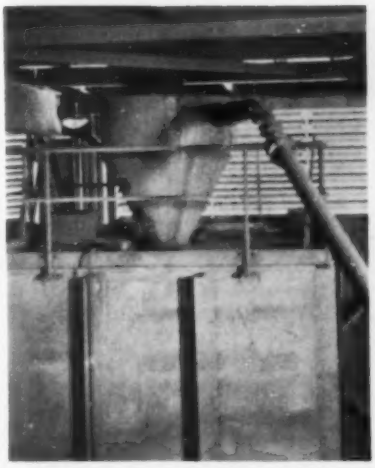
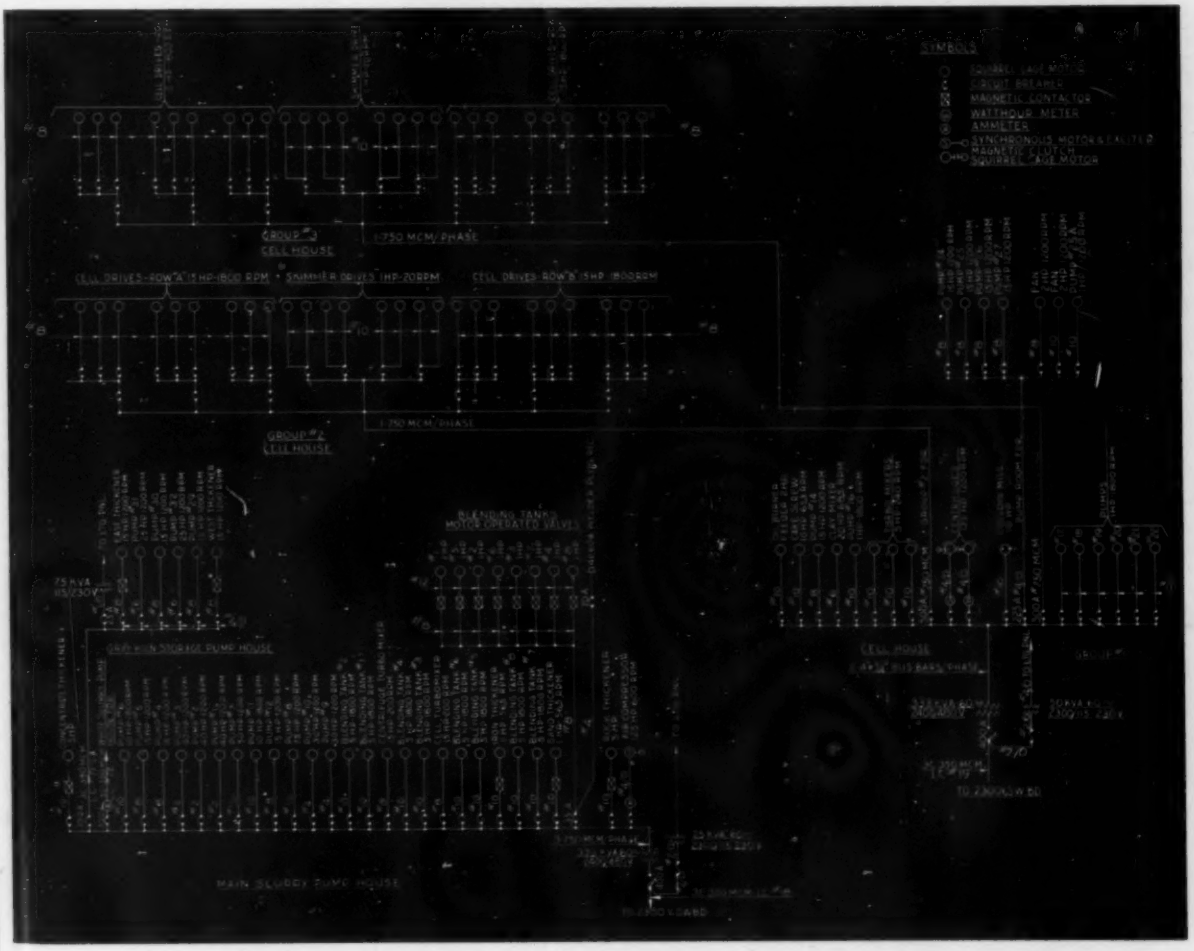


Fig. 61. Culm feeder bin for auxiliary waste-heat boiler

Fig. 62. Substation floor showing motor-generators for direct current and air compressors at far end

other d-c. equipment such as cranes. Two air compressors in this building supply high pressure air wherever it is needed in the plant. This building is 225 ft. by 40 ft. and of handsome architectural concrete design.

As already noted, this substation contains the control switches for all important plant units. Stop button switches at the machine can cut off any unit, and automatically all auxiliary units, but the main unit can



Electrical distribution system of flotation cell house and main slurry pump house: 440-volt single line diagram

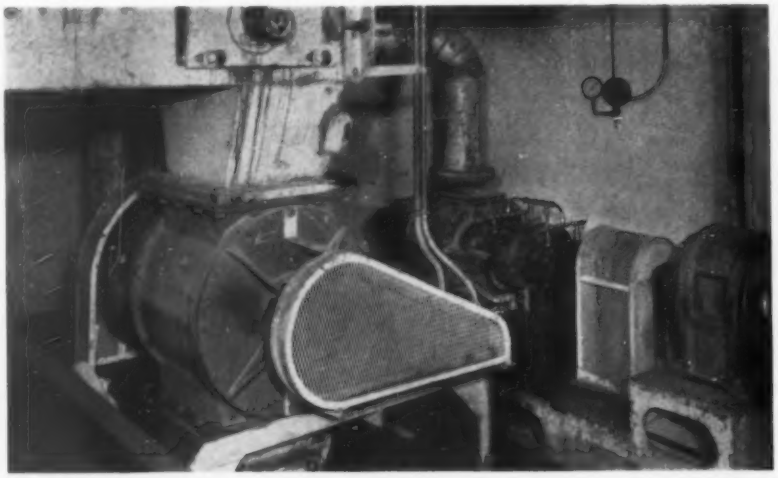


Fig. 63. Airveyor for anthracite culm for stoker-fired auxiliary boiler

Fig. 64. Typical switchboard in the substation

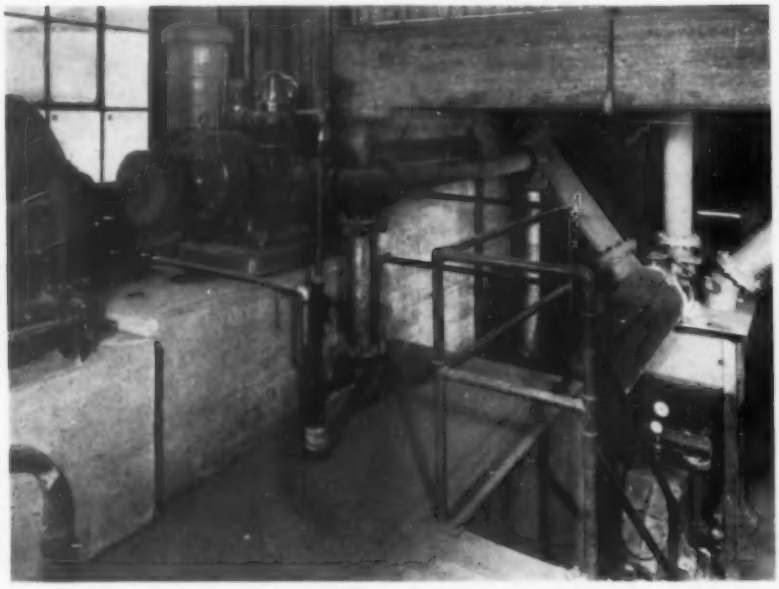


Fig. 65. Cement-type pump for flue dust in stack housing

not be started again except on signal to the substation, where all switches are interlocked in such a way that the units must start in proper sequence.

In addition to the main control switchboard in the substation, there are, as has been pointed out, very complete control boards for the various units, such as the cell house, the filters, the kiln burning apparatus.

Award Service Pins to Cement Plant Veterans

DEWEY PORTLAND CEMENT CO., Bartlesville, Okla., awarded service pins to its veteran employes at a recent company picnic. The award ceremonies were conducted by Don Tyler, first vice-president of the company. Twenty-year service pins were awarded to the following: J. E. Eller, B. F. Pallett, Jose Enriquez, Floyd Hacker, D. M. Turley, W. D. Pallett, Von Coke, Columbus Cooley, John Anderson, J. O. Brashear, Earl Cleland, and Alfonso Vargas. Other employes given recognition for longer service were: George Swank, E. R. Cheek, P. R. Chamberlain, Curtis Gibson, James R. Smith, Robert Dixon, and Willie Green.

COMING CONVENTIONS

American Concrete Institute, Chicago, Ill., February 29 to March 2, 1944.

National Crushed Stone Association, Annual Meeting, Hotel New Yorker, New York, N. Y., January 31 to February 2, 1944.

National Ready Mixed Concrete Association, Annual Meeting, Hotel New Yorker, New York, N. Y., January 26 to 28, 1944.

National Concrete Masonry Association, annual convention, Chicago, Ill., February 15-17.

National Sand and Gravel Association, Annual Meeting, Hotel New Yorker, New York, N. Y., January 25 to 27, 1944.

Practical Operation Conveyor Belts

Part 8: Specifications for conveyor belts are inadequate

By MELVIN C. DOW* and HARVEY A. HARNDEN†

FOR THE PAST TEN YEARS it has been our practice to purchase belts under a set of specifications made to cover the three grades of conveyor belting generally used in stone crushing plants. These specifications cover in more or less detail the following points:

1. Construction and lay-up
2. Adhesion or "friction" between cover and carcass of belt between adjacent plies
3. Belt covers
4. Qualities and types of cotton duck

In these specifications it is stated that it is the intent of the purchaser that all belting will be inspected prior to acceptance, these tests to be made at the vendor's laboratory or at any recognized commercial testing laboratory at the purchaser's option. Failure of any belt to meet all of the specifications under which it is bought shall be considered absolute cause for rejection of the piece of belt tested. While it is the purpose of such specifications to insure getting the proper belt quality they fall short of their purpose for two reasons. In the first place, it is impossible to write a specification that will cover all of the points of manufacture; the skill and methods by which the belt is fabricated have an important influence on belt quality. In the second place, it is practical to test only the end of a belt so that an unscrupulous manufacturer could make the ends properly and yet skimp in the construction of the remainder of the belt. This is particularly true in the matter of internal splices, short ends, and duck quality. No specification can insure that the belt will be fabricated skillfully or the rubber compounded correctly and properly cured. Such specifications, however, do serve to roughly classify the various grades now more or less standardized.

It is unfortunate that the rubber manufacturers themselves have not cleared this situation by stating that their belts conform to a certain stated minimum standard rather than by their present practice of using brand names and by merely stating that one brand is for severe conditions and another for moderate conditions. After all, such terms as moderate, severe, light, heavy, are but comparative at best and are hardly the answer to the purchaser seeking accurate belting information. All belts look quite similar when new and to a large extent the purchaser buys entirely on faith and to some extent on prejudice.

Fortunately for him, the larger manufacturers use rigid specifications in their own factories but it would be mutually advantageous if the manufacturer would acquaint the belt user with his specifications and method of manufacture in place of the present tendency of advertising meaningless generalities and unimportant abstractions. The belts generally used by the crushed stone industry can be classified in three grades. What we call Grade No. 1 has a minimum tensile strength of cover of 3500 p.s.i. and a minimum friction between plies of 20 lb. per in. of width. Grade No. 2 has a minimum tensile strength of 2500 p.s.i. and a minimum friction between plies of 16 lb. per in. of width. Grade No. 3 has a minimum tensile strength of 1400 p.s.i., and a minimum friction between plies of 12 lb. per in. of width.

Comparative Grades

The comparative belt brands as given by the Link-Belt Co. are shown in the following table:

Manufacturer	Grade No. 1	Grade No. 2	Grade No. 3
Boston Woven Hose	Bulldog	Silver King	Aurocks
Cincinnati	Losant	Pacemaker	3030
Goodrich	Super Long Life	Long Life	2002
Goodyear	Stacker	B	C
Hamilton	Super Service	Endurance	Wizard
Hewitt	Maltese Cross	Circle	Ajax
Link-Belt	Faultless	Lion	National
Manhattan	Super Master	Master	International
Pioneer	Victor	Reliance	Sunset
Republic	Super-Excello	Record Maker	Producer
United States	Matchless	Giant	Amazon

Grade No. 1 can be furnished in 28 oz., 32 oz., 36 oz., or 42 oz. ducks and is generally provided with a breaker strip in the top cover. The adhesion of the top cover is about 30 lb. per in. of width.

Grade No. 2 can be furnished in the same weights of duck as Grade No. 1. A breaker strip should be furnished if there is any danger of tearing or gouging and the adhesion of the top cover for this grade is about 28 lb. per in. of width.

Grade No. 3 is usually furnished in either 28 oz., or 32 oz. duck, and since this grade is not ordinarily used where heavy or sharp lumps are conveyed it is not usual to require a breaker strip. Without a breaker strip the adhesion of the top cover is about 15 lb. per in. of width.

Only Two Grades of Belt Now Permitted

The foregoing data is based on experience with specifications of conveyor belt prior to the entry of United States into the war. Under present conditions, the War Production Board, under order M 15-b-1, has limited manufacturers to only two grades, known as War Style B and War Style W.

Grade No. 1 is made on 28, 32, 36 and 42 oz. duck and skim-coating is permitted only on the 42 oz. duck construction. The top cover tensile is 1700 to 2200 lb., the bottom cover strength is 800 to 1000 lb. and the friction between the plies is 16 to 19 lb. Breaker strip is permitted in the top cover but must be specified and is included in the total cover thickness.

Grade No. 2 is made with 28 and

(Continued on page 54)

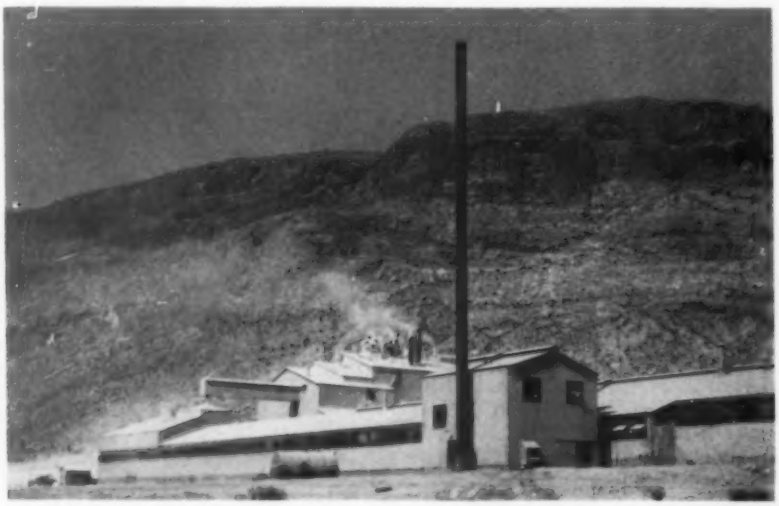
*Chief engineer, New York Trap Rock Corp., Newburgh, N. Y.
†Formerly with Engineering Department, New York Trap Rock Corp.

GYPSUM

Take Wallboard Plant to Quarry

Blue Diamond Corporation saves long freight haul by building modern board plant near quarry. Construct model village for workmen

TO SAVE A LONG HAUL from its quarries at Blue Diamond, near Arden, Nev., to its Los Angeles plant and to provide more modern manufacturing facilities, the Blue Diamond Corporation built a new gypsum mill and wallboard plant less than a mile from the quarry. Practically all the product has been going into defense construction.



Above: General view of gypsum wallboard plant. Mill and calcining plant in the background to the left. Wallboard plant in the foreground

Quarry operations have been going on at this location since 1931. The deposit is a remarkably pure gypsum, the lower strata, 12 to 20 ft., testing nearly 98 per cent $CaSO_4 + 2\ H_2O$, and the upper strata, 10 to 20 ft., averaging about 85 percent. Test borings of undeveloped rock deposits owned by the company indicate an almost inexhaustible supply of raw material which justifies the company's decision to build the new plant that went into production in the summer of 1943.

It has been the practice to strip overburden with shovels and a Caterpillar equipped bulldozer, and blast down the rock by open quarry methods. However, when the overburden becomes too great the rock is mined by the room and pillar method, no shoring being required except at entrances. Narrow gauge rail cars hauled the mined rock to the primary crusher, but present operations are all open quarry with excavation by a 2½ cu. yd. Lima and a 1½ cu. yd. Link-Belt shovel loading into two trucks, each having a capacity of 8 tons per truck.

Well drills are used for the blasting holes, and drilling for secondary shooting is done with Ingersoll-Rand jackhammers.

The crushing plant is near the quarry high up in the mountains. It consists of an Ehrsam jaw crusher followed by an Ehrsam gyratory crusher. All crushing equipment and the Chicago Pneumatic compressors are driven by a 150-hp. Fairbanks-Morse Diesel engine.

A cableway 3500 ft. long takes the product from the crushing plant to the raw rock storage bunkers below. There are 24 buckets on the line, each holding 1735 lbs., with a total capacity of 56 tons an hour.

Grinding and Calcining

Crushed rock is dumped by the cableway buckets to a hopper feeding a double-deck Hummer screen which makes a separation of a plus 1-in. on the top deck and minus ¼-in. on the lower deck. The middlings or minus 1-in. and plus ¼-in. is the gypsum rock for the cement

Right: Cableway 3,500 feet long transports crushed gypsum rock from the primary crusher at the quarry to the wallboard plant. Screen over bunkers separates cement rock from the plaster grades

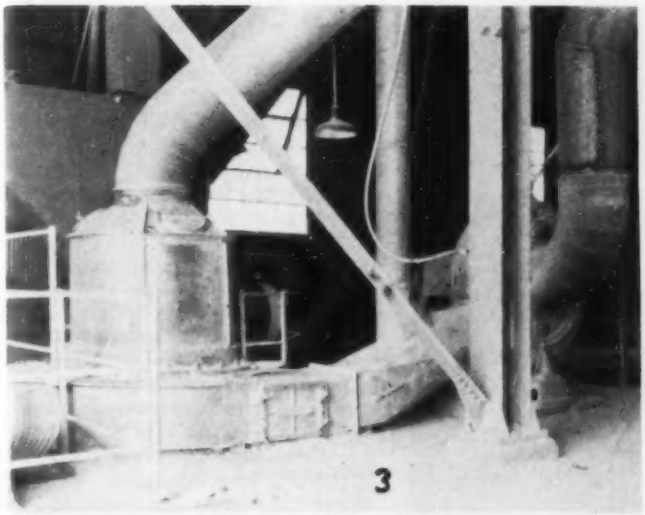


Fig. 3: One of the two low-side roller mills for grinding gypsum rock

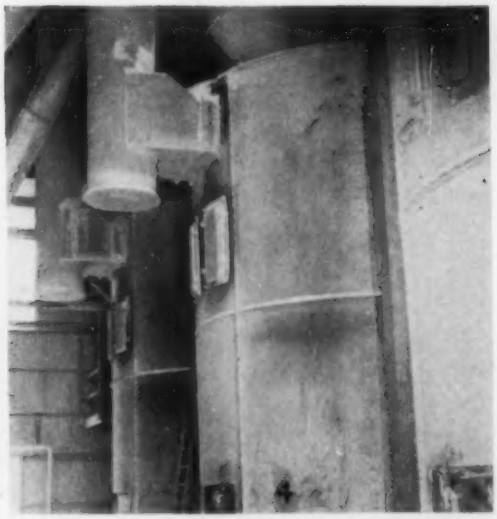


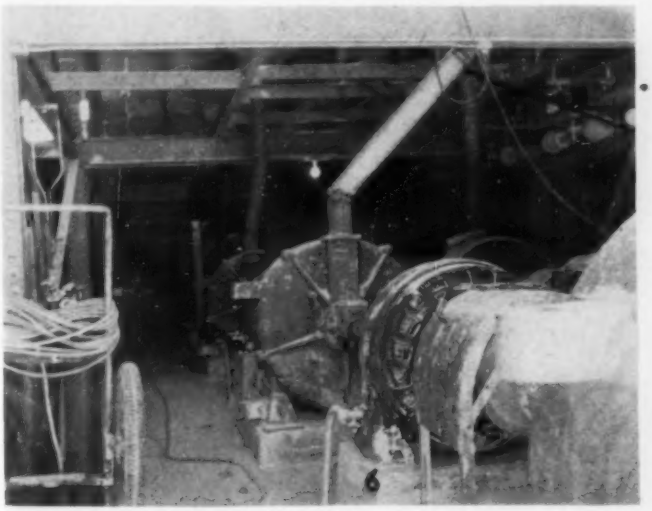
Fig. 4: Three oil-fired gypsum calcining kettles, each of which has a capacity of 17-tons per batch

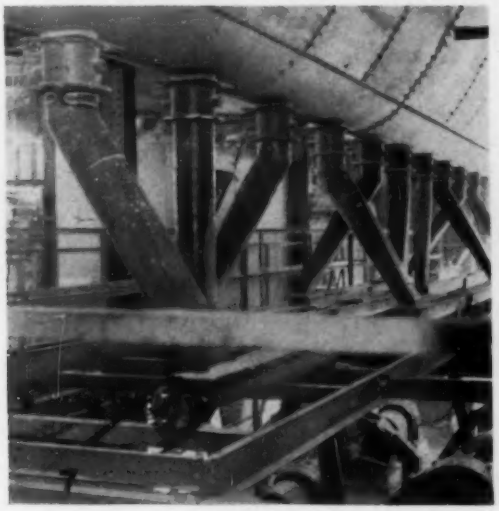
Views of Grinding and Calcining Operations at Blue Diamond Plant

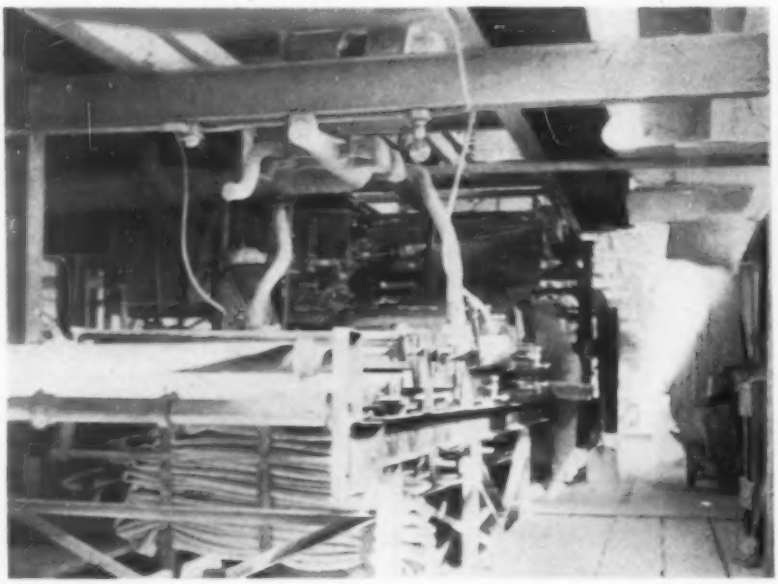
Fig. 5: Two bag packing machines for plasters put up in paper bags

Fig. 6: Looking down aisle in mill room, showing some of the eight buhr mills

Fig. 7: Bins over battery of eight 36-inch buhr mills







Secondary mixer at feed end. Product is discharged to the paper on the roller conveyor on which it moves to the rolls which shape the sides of the wallboard

industry that drops into the bunker below for loading into railroad cars, and the plus 1-in. and minus ¼-in. goes to the plaster mill compartment bin or storage bin by belt conveyor. A shuttle conveyor extends across three compartments (each holding 350 tons) of the mill bin and into the separate 2000-ton capacity storage bin. The compartment bin holds three grades of rock, one for ordinary wallboard, another for hardboard, and a third for casting or molding rock.

Spouts from these bins lead to either of two Raymond low side mills. Fans blow the pulverized gypsum to 8-ft. cyclones. The products of these two mills move by screw conveyors to three 60-ton bins above three oil-fired Ehrsam gypsum calcining kettles, each of which has a capacity of 17 tons an hour. Calcined gypsum drops into an individual hot pit for each kettle. The gypsum is removed from each pit by four screw conveyors that unload into a long collecting screw conveyor at right angles to the pits below the kettles.

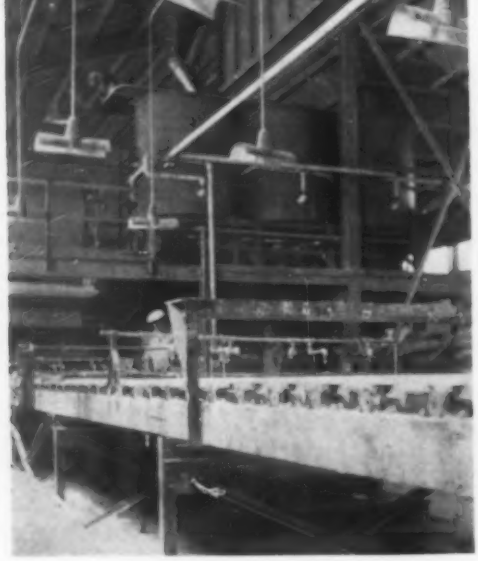
The collecting screw conveyor dumps into the boot of a bucket elevator which carries the calcined gypsum to a hopper feeding two double-deck Hummer screens or it may by-pass the screens and go direct by screw conveyor to the wallboard plant building.

Below the Hummer screens are four regrind bins with a total capacity of 350 tons that hold the coarse material which is fed to eight 36-in. Ehrsam buhr mills by spouts and screw conveyors. Collecting screw conveyors take the product of the buhr mills to enclosed bucket elevators that discharge into screw conveyors which dump into five finish compartment bins; two for hardwall, two for casting, and one for gauging plaster. Fines from the Hummer screens go direct by spout to the finish bins. The finished product of the mills varies from 92 percent through 100-mesh for hardwall plaster to 99 percent through 100-mesh for dental plaster.

From the finish bins, the gypsum is spouted to three charge hoppers and mixers where fibre is added in accurately weighed out amounts to the charge which will be dropped into the Bates bagging machine hoppers below. The fibre is prepared in a fibre picker made by Fred Franke and Co., which is driven by a 5-hp. G. E. motor.

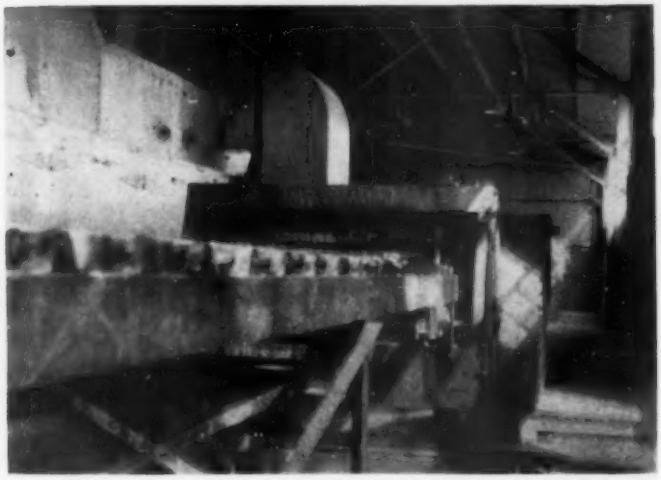
Wallboard Plant

Gypsum from plaster bins is moved by screw conveyor, previously mentioned, to two 100-ton capacity stucco



Left: Looking toward feed end of board machine. Above, and to the right, may be seen the stucco bins, the starch and the rosin tanks

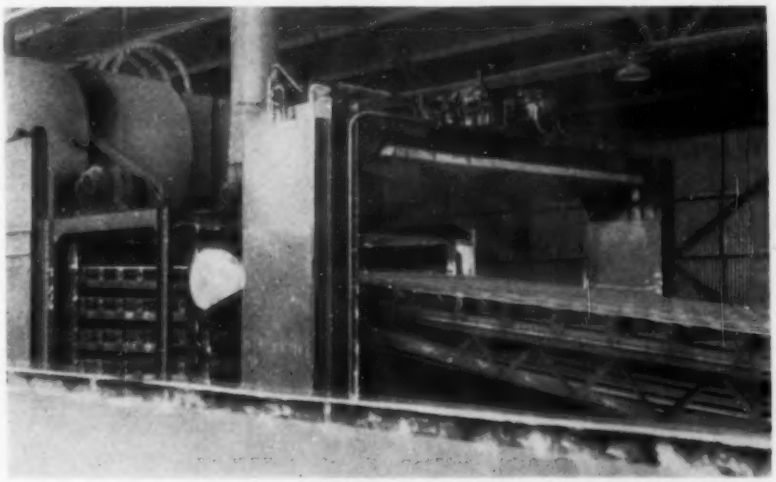
Below: Automatic punch for the preparation of gypsum lath. The dryer is shown to the left



bins which feed three mixers where the stucco is prepared for the Ehrsam wallboard forming machine. Master rolls form the sides of the board or lath to the specified width and thickness. The board faced with paper moves along two 126-ft. Goodyear belt conveyor sections with 54-in. wide belting.

An automatic Ehrsam punch press and cutoff knife prepares gypsum lath at the end of the following 88-ft. roll conveyor section before the board reaches the transfer belt or table where the cut wallboard is returned for drying in the six-deck Coe dryer. A separate oil-fired Babcock & Wilcox boiler installation provides steam for the dryer. This dryer has a capacity of 80,000 yd. of 5/16-in. lath per day. The wallboard transfer belt is actuated by an electric eye. A 25-hp. G. E. motor drives the 88-ft. section of conveyor through a Reeves double reduction gear. The Reeves reducer also drives a Selsyn generator supplying power for the 7½-hp. Selsyn motors driving the other two belt conveyors. This arrangement permits variation in speeds, depending on the size of the board being manufactured.

The entire structure is of steel and concrete which practically eliminates any fire hazard. Hinged windows along the entire length of the wallboard building provide ample ventilation, and daylight is supplemented with an excellent electric lighting system. All power, except for the quarry, is furnished by a utility power line system. A branch line track connects directly with the Union Pacific Railroad main line a few miles away at Arden, Nevada.



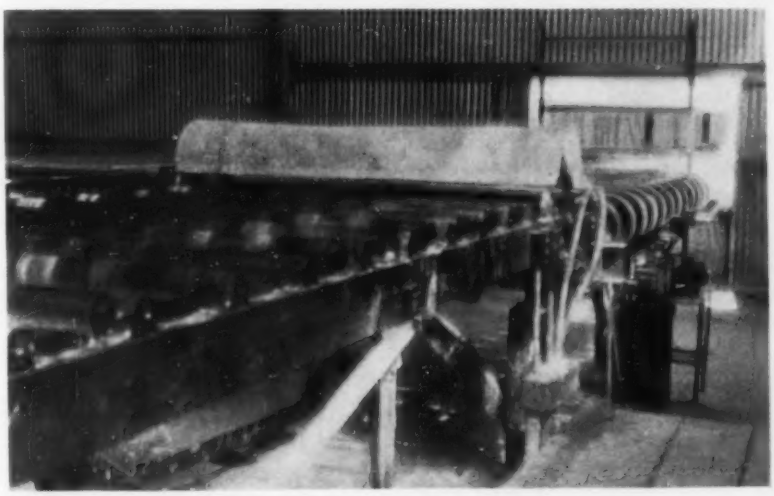
Six-deck dryer which has a capacity of 80,000 yards of 5/16-inch lath per day

Concrete swimming pool for employes. Model village in the background

A machine shop is maintained in a separate building which is equipped with all essential tools, welding apparatus, and a forge to make any repairs that may be necessary.

Model Village for Workers

Although the plant itself is of very modern construction, the pride of the company is its model village of Blue Diamond, Nev., where the employes live. It is self-contained with a modern store, having electric refrigeration and showcases for meats and vegetables, and practically every staple found in a well-stocked city store. There is a two-room schoolhouse with two regularly employed teachers which also serves as a meeting place for social activities, and a modern concrete swimming pool. The houses, of various sizes to accommodate different size families, are insulated and well-built, and have all the heating, electric and plumbing facilities of the larger cities. It also has its own water pumping and storage system, the water being excellent quality.



Wallboard transfer belt which is actuated by an electric "eye"

Community store and recreation center for employes

Attractive bungalows were built for the company employes and officials

A separate village is maintained for the quarry employes near the crushing plant up in the mountains, but eventually it is planned to bring all the employes down into the Blue Diamond model village. Single employes are provided with comfortable and clean bunkhouses, and a cookhouse and dining room are maintained near the mill to feed the employes.

Conveyor Belts

(Continued from page 49)

32 oz. duck. The top and bottom cover strength is 800 to 1000 lb., the friction 12 to 15 lb. Skim-coating is not permitted and the breaker strip may be furnished and must be included in cover thickness.

Under present war-time conditions the brands may be listed as follows:

Manufacturer	Grade No. 1	Grade No. 2
Boston Woven Hose	Silver King	Iron Clad
Cincinnati	Pacemaker	Sandow
Goodrich	Longlife	Maxecon
Goodyear	"B"	"W"
Hewitt	Circle	Mohawk
Manhattan	Master	Delhi
Pioneer	Reliance	Golden Gate
Quaker City	Quaker City	Hercules
Republic	Record Maker	Chariot
Thermoid	"400"	"450"
U. S. Rubber	Giant	Security

Within the past few years the cord type of carcass construction has been developed for conveyor service. The cord construction has certain inherent advantages over fabric and if these newer belts prove to be practical there are many locations where their installation would be economical. The writers have had no personal experience with such belts and therefore are not qualified to comment on their performance. However, it is generally known that the principal disadvantages to the cord construction has been the increased first cost and the difficulty in making satisfactory splices by the ordinary field methods. There is little doubt that if these disadvantages can be economically overcome, the increased use of this construction will be of great benefit to the industry.

In addition to the characteristics mentioned above it is often desirable to specify certain special requirements. For instance, a stepped ply construction with its greater cover thickness in the center of the belt is useful where the belt cannot be uniformly loaded and is subjected to additional wear at that point. A skim coat between plies is an additional precaution, worthwhile if the belt has to run over less than normal diameter pulleys. Where there is danger of puncture to the top cover so that moisture can get to the carcass and where the belt is alternately wet and then dry, mildew will often ruin the carcass before the cover is worn out. In such cases a carcass with a mildew proof treatment will help to give a nearly normal amount of service.

Mineral Paint Extenders

IN THE MIND of the layman there is a persisting suspicion that extenders are used for just one purpose: to reduce the cost. That this is one of the important, and legitimate, functions of extenders there is no denying. It is no less true that on strictly technical grounds extenders are among the most useful tools in the paint formulator's kit. This utility is being constantly enhanced by two developments: first, new and improved types of extenders; second, increased use of pigments having high hiding power, which indicates the use of larger amounts of extenders and thus increases their effect on paint properties.

The problem would be simplified if we could make a neat classification of extenders on the basis of source, composition, or some single physical property and then show a direct relationship between this classification and paint-making properites. As every paint chemist knows, this scheme will not work. The author is unable to improve on the conventional classification of extenders, one arrangement of which follows:

- Barium sulphate
  - Natural—barytes
  - Precipitated—blanc fixe
- Calcium sulphate
  - Gypsum, terra alba
  - Plaster of Paris
  - Anhydrous
- Calcium carbonate
  - Whiting—natural
  - Precipitated
    - Regular type
    - Extremely fine (Multifex)
    - Surface treated with organic acid (Surfex)
- Magnesium carbonate
- Silica
  - Quartz
    - Standard types
    - Extremely fine
  - Diatomaceous silica
    - Coarse
    - Fine
- Magnesium silicates and related minerals

(Continued on page 58)

Fundamental Problems of Rock Wool Manufacture

By VICTOR J. AZBE*

IN ITS FUNDAMENTAL ELEMENTS, manufacture of rock wool is a very simple process. The rock is heated until it is fused, then blown with air or steam into rock wool. However, in actual practice the process is far from being so elementary and, when considered in its higher technical aspects, it is rather complicated.

The reasons for this complexity are that there are rocks and rocks and, although two rocks may analyze the same, the ingredients may be differently combined, and consequently act entirely different. Then the process of heating and melting is one that should puzzle even the most advanced combustion engineer. A statement on the part of anyone to the effect that he has mastered the thermodynamical phase of this subject, definitely reveals such a person as one who does not truly realize the intricacy of the process and, at best, knows very little about the subject.

As there is a desire for an ultimate product of definite fineness and color, it seems that there must be, all the way back through the entire range of operations, some standard that should not be deviated far from the ideal. This starts with the selection of rock in the quarry, the sizing of such rock, the proportioning of coke, the mode of charging, and uniformity of distribution of the charge.

Many Problems Involved

There is the matter of uniformity of coke, size and quality of coke. Rock of different kind will require different amounts of heat or different degrees of temperature. Some will fuse readily and directly without a chemical change, while others, before fusing, may have to pass through several transformations, some of which may require quantitatively a great deal of heat, a matter separate entirely from temperature requirements.

Other considerations include the matter of air blast, temperature of this blast, mode of preheating air, value of preheating air, combustion of coke, nature and temperature of gases leaving the cupola, and disposition and possible utilization of sensible and potential heat in these gases.

There are problems of steam for blowing, proper amount, proper pressure, degree of dryness, addition of oils, exactly correct method of application. Then incidental problems connected with the boiler, its proper size, availability of water, purity of such water, feed pump or injectors; hand firing or stokers, kind of coal, cost of coal, value of possible savings contrasted with possible investment.

Then the problems incidental to cooling the cupola into which again there is encountered the problems of water purity, pumping of water, and possible connection to and circulation through the boiler to conserve the heat.

In addition there are problems connected with arrangement of blowing room, the gathering of the product, the forming, the storing and loading, and the one dealing with protection of the men.

To thoroughly master the subject and correlate all of the incidental information, would require advice from people versed in geology, in chemistry, in combustion specialized to cupolas and combustion specialized to boilers, and from experts in material handling and other phases of mechanical engineering. It is possible that one person may be able to do it all, but such an individual certainly should appreciate the fact that he cannot possibly know it all and should be able to call in information from many other sources.

Different Rock Requires Different Treatment

Reverting back, we have the stone —if it was a previously melted slag the many possible chemical reactions requiring or giving off heat have taken place and then all that would be necessary would be to heat it to incandescence and supply the latest heat of fusion, when it would become fluid. The temperature requirement may be as high but the heat requirement much less than in any other case. There would be no gas given off to carry heat to waste; there would be no carbonates to dissociate into oxides. What is more, one lump would have a great deal the same composition as the other; the fluid mass to be blown would be of the same consistency and therefore of the same viscosity. The time element necessary to combine various ingredients would be the least. In view of all this, cupola capacity would be the highest, cupola size the smallest, heat waste the least, fuel consumption the lowest and the product the most uniform.

Contrasting this ideal, there is the situation where the stone is a relatively pure limestone, to which siliceous ingredients would be added separately to form the low melting silicates and aluminates, which is rock wool. In this case, none of the above mentioned advantages would prevail. It would not be merely a matter of heating; the cupola would not be just a heater, but would be as well a lime kiln, a sintering kiln and a melting furnace. In the upper parts, the stone would just be preheated; lower down the iron carbonate; next the magnesium carbonate, and finally the calcium carbonate, would break down and give up their CO_2. Through all of this the silica would pass as such, in no way entering the process, only considerably below the zone of dissociation of calcium carbonate would there be an incipient combination of the ingredients; as the temperature increases, semi-fluid slags would eat into the still solid ingredients, into the porous lime and solid silica or alumina. Through this whole process a great number of combinations would take place, all dependent upon temperature and the predominance of the various materials in any one given region of the fusing mass. There would be various silicates and aluminates and ferates of calcium and magnesium, and combinations of them, reactions numbering to a hundred or more. The many variables in all this would need time to aggregate themselves and average out to form

*Consulting Engineer.

a fairly uniform calcium aluminate silicate mixture, of proper viscosity for best results when it finally is blown with steam.

Calcining Problems

In the case of such material the cupola should be higher because it takes time to convert the limestone into lime. Say that stone contains 60 percent $CoCO_3$ and $MgCO_3$ and that cupola output is 12 tons, this means that some 4 tons of lime will be made, and to make this amount of lime efficiently, requires heat and time, the latter of which is not consistent with the size of most recommended cupolas. Of course, it is possible to force things, and limestone, when of small size, can also be converted into lime rapidly, but overly short time always results in high waste gas temperatures and fuel waste.

Much better than separate sources of lime and silica is the condition where stone is available from the quarry already having the desired combination. But quarries that are reliable in this respect are scarce. If stone too high in calcium accidentally should be charged to the cupola, operation would soon come to a stop. As capacity of the fluid zone is very small, not many charges would be required to upset everything, and even one would have a deleterious effect on operation. If the ledge is not uniform or when stone is obtained from different ledges, chemical testing should be resorted to. The simplest test would be an apparatus that would indicate the amount of gas a sample of stone gives off when tested with an acid which is indicative of the quantity of carbonates present in the sample.

The rock should be reasonably uniform. Large lumps will heat, dissociate and melt too slowly and will reduce the capacity very greatly. Too small particles, on the other hand, will block the cupola and be the cause of blow holes and channeling of gases through the charge.

Heat Losses Too High in Rock Wool Manufacture

To a great extent, too, in case of coke, if it is small, it will burn up high in the cupola and do little good in the hot zone. If too large, it will present too small a combustion area. The ideal would be where all coke is completely burned at the base, with the gases giving up their heat as they pass up through the charge. This would give the lowest top temperature as well as the lowest loss due to incomplete combustion.

The stone and coke layers, the size of stone and coke with temperature and pressure of air blast, all have an important influence on cupola efficiency.

Dissociation of carbonates is an endothermic reaction requiring heat, while formation of calcium and magnesium silicates and aluminates is an exothermic reaction giving off heat. The amount of heat generated by the exothermic reaction is a rather high figure in proportion to the endothermic reaction and should aid greatly in obtaining high efficiency. Still, the efficiency of any ordinary rock wool installation is very low; although the ratio of fuel to rock wool may be one to three or one to four, efficiency may be only 10 percent or less. The reason for this is the high radiation loss, the heat carried to waste by the jacket water, the escape of hot gases from the cupola, the presence of carbon monoxide in these gases in considerable quantities. The sensible heat of the fluid mass is also high and it is all lost; the air for combustion enters cold and requires immense quantities of heat to be preheated to the very intense temperature existing above the hearth.

Most installations follow the ordinary cupola practice which is intermittent, while this is a continuous operation. It seems that if better results are to be obtained the procedure should be more along the line of blast furnace practice, which is particularly careful about preheating air. Wherever reactions are at a high temperature level, as in the case of blast furnaces, glass furnaces, open-hearth steel furnaces, preheating of air is vital. The difference is only that in these cases operations are very large, fuel consumptions very great, and the value of any saving runs into big money.

Cupolas for rock wool were designed where the cupola was connected with the boiler carrying the heat to the boiler drum to aid in generating steam. Also the cupola was designed to connect to the boiler furnace and the gases passed through the boiler, both giving up much of their sensible heat, as well as burning the carbon monoxide. However, such installations are costly, and the question is, do they pay? The problem always is to find where higher efficiency stops being economical. However, preheating of air is comparatively simple and should be of such thermal value that it should be the minimum requirement in the effort to raise the installation above the ordinary. It does seem a pity though that where so much heat is wasted, still more fuel is burned for the generation of steam.

Cupola Design

While on the subject of cupolas, it may be well to mention that rather likely in cases of unhomogenous raw materials, the cupola should be followed by a small tank on the order of a glass tank, where the mass will have time and opportunity to mix thoroughly, which would be conducive to a better product though not necessarily to higher efficiency. However, the idea of using tanks only without cupolas, which is the tendency in certain quarters, is also wrong. There is hardly anything less efficient than a glass tank because there is no such intimate contact between the product and the hot gases. Of the heat, little is transferred by convection, but principally by radiation, which is decidedly limiting.

It is true, of course, that there are simple rock wool plants; in fact extremely crude, but they bear the stamp of not being anywhere near as profitable as the common idea of rock wool manufacture would have it. With more plants being built, plants designed for quality of product, efficiency of operation and volume of output, competition will be such that any plant that is not right will be more of a worry than money maker to the investors.

The plant will have to be right, not only along lines commented upon thus far, but also as to material handling. For 24 tons of wool a day, some 32 tons of rock will have to be handled, and not rock just taken at random, but rock with limitations in size and quality. This will have to be charged continuously during 24 hours in correctly proportioned and comparatively small amounts. In addition there is the handling of coke and firing of the boiler. The gathering, storing and loading of the rather bulky rockwool and the many other operations.

Labor can become quite a factor and great care needs to be exercised if it is not to eat up much of the expected profit. However, if the requirements are realized, are kept in mind, and difficulties overcome by careful design, the manufacture of rock wool should be profitable. The first requirement, however, is to abandon the prevailing idea that the process is simple.

Spodumene for Lithium

Superior Stone Co. has contract with Solvay Process Co. for the quarrying and crushing of spodumene ore

WAR has turned many rock products companies to new operations where their equipment and organizations can be used to best advantage. In the mountains near Kings Mountain, N. C., The Solvay Process Co., New York, N. Y., has erected a plant to process spodumene ore. Spodumene is a lithium aluminum silicate. Lithium and its salts are used in alloys, in aluminum welding and in many other vital uses furthering the war effort. As pointed out by J. W. Cannon in *The Shelby Daily Star*, the Solvay Process Company came after spodumene, but it will make extensive use of the other minerals which it recovers in the milling process, mainly tin, feldspar and mica.

Superior Stone Co., Raleigh, N. C., has a contract with The Solvay Process Company of Syracuse, N. Y., for the quarrying and crushing of spodumene ore for the Solvay plant. Superior Stone Company operates a limestone quarry at Kings Mountain within three-quarters of a mile of the spodumene ore deposit and the processing plant of Solvay.

Quarrying and Crushing

The deposit is cleared, then stripped by Superior of all earth and rock not containing spodumene. The ore body is then drilled with Ingersoll-Rand wagon drills and jack-hammers and shot down on the floor of quarry. The ore is then loaded into six-ton Mack trucks with a ¾-cu. yd. Northwest shovel and hauled to Superior's plant site three-quarters mile north. The ore is placed in stockpile as Superior Stone only crushes spodumene as required to meet the needs of Solvay, and all other times the plant is producing the normal requirements of crushed limestone. On the day or days that spodumene is crushed all bins, chutes, and crushers are carefully cleaned out, and the spodumene ore is loaded from stockpile by a 2-cu. yd. Bucyrus-Erie shovel and transported to dump into a 48- x 60-in. jaw crusher.

On days that spodumene is crushed, the trucks coming from the spodumene quarry dump directly to a jaw crusher without going to stockpile. After leaving the primary crusher the ore goes to a scalping screen and from there to a 14-in. Traylor gyratory crusher or to one of two Symons reduction crushers depending on size. The ore is all reduced to minus ½-in. size and then loaded from bins by belt conveyor and returned to the Solvay plant for final processing.

Loading spodumene rock into 6-ton truck with ¾ cu. yd. shovel

Spodumene rock is crushed and screened down to minus ½-in. size at the Superior Stone Co. plant for delivery to The Solvay Co. plant

Ore delivered to the Solvay plant is milled in two large pebble mills, reducing the spodumene ore to a fine sand. It is then given several washings and the impurities are allowed to float away. The cleaned product is then sent into conditioners where chemical reagents are added. From the conditioners, the wet pulp is moved into flotation cells where the feldspar and mica settle to the bottom and the spodumene is floated off. This product passes through filter wheels, and is then thoroughly dried in a dryer before stockpiling. This is said to be the first plant of its kind in the United States.

Help Your Neighbor

• The Government has asked publishers to conserve paper in every possible way, so, if you do not file your copies for future reference, pass this copy along to your neighbor so that he, too, may share in the many helpful suggestions it contains. Be cooperative and patriotic.

Processed spodumene in stockpiles at the Solvay Co. plant. Philip Le Baron, plant superintendent, to the left, and W. W. Tolleson, construction superintendent of the plant

Mineral Paint Extenders

(Continued from page 54)

- Fibrous talc (Asbestine)
- Plate talc
- Pyrophyllite talc (Pyrax B)
- Calcium and magnesium carbonates and silicates (Metro-Nite)

China clay
- Imported English
- Domestic

Miscellaneous
- Mica
- Soapstone
- Slate flour
- Keystone filler
- Pumice

Following is a partial list of the properties of extenders that influence their value and specific function in paints:

1. Particle size and size distribution.
2. Particle shape.
3. Texture, that is, whether soft and pulverent like whiting or hard like quartz silica.
4. Chemical reactivity.

   This refers not only to basicity or alkalinity but also to reactivity with vehicle because of surface treatment with polar compounds, such as Surfex.
5. Oil-absorption value.
6. Color.
7. Specific gravity.

Among the properties of paint that are affected by the kind and amount of extender are:

1. Settling and caking
2. Consistency
3. Working
4. Flowing
5. Drying
6. Gloss
7. Color
8. Hiding
9. Sanding
10. Sealing or "holding out" qualities
11. Washability
12. Yellowing
13. Water resistance
14. Water sensitivity
15. Adhesion to metal
16. Corrosion resistance
17. Exterior durability

—WAYNE R. FULLER, Technical Director, The Marietta Paint and Color Co., Marietta, Ohio, in a discussion for the American Society for Testing Materials.

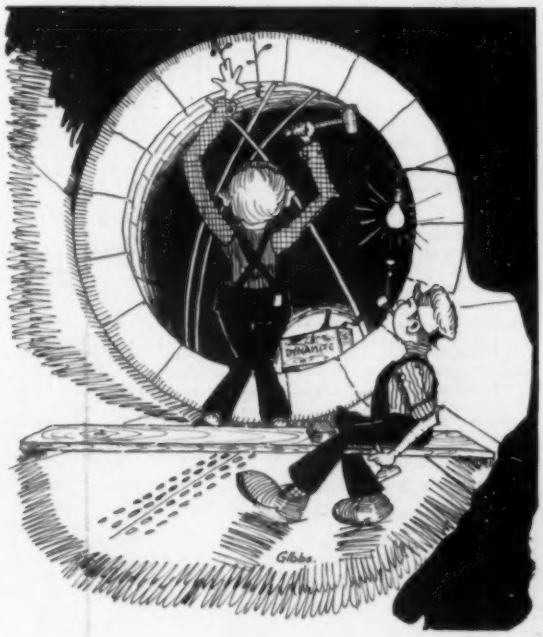
Award to Permanente

PERMANENTE CEMENT CORPORATION and Permanente Magnesium Corporation recently received the Guidon Award from the Army for efficiency of its defense guard. D. A. Rhoades, Permanente project manager, gave the welcoming address. E. E. Trefethan, Jr., vice-president of the company, was one of the speakers.

Controlling Factors for Efficient Kiln Operation

Part 5: Value of insulated kiln linings

By RALPH GIBBS*



ORDINARILY KILN LININGS are insulated only in that region between the high temperature zone and the some optimum distance from the feed end. Insulation of the high temperature zone offers several problems which are difficult of solution.

The high temperature extremity of the insulated section is arbitrarily chosen at some point of the kiln wherein the possible temperature of the insulating material itself will not be above 1400 deg. F. The other extremity is chosen at a point beyond which, because of low temperatures, insulation does not offer a satisfactory return on the investment.

There are those who maintain that insulation of the lining in this region simply results in higher exit gas temperatures and that the savings, therefore, are insignificant. Only those who have not thoroughly studied the problem of kiln lining insulation will make such a statement.

In order to estimate approximately the temperatures and heat quantities involved in uninsulated and insulated kiln linings, it will be well to consider a hypothetical problem and thus determine in a general way what might be anticipated in practice.

The pertinent conditions assumed are as follows: The kiln is 9 x 175 ft. without any feed preheating arrangement. Coal of 13,500 B. t. u. heating value is used as fuel, which is delivered to the kiln at a cost of $4.75 per ton, and the fuel ratio is 3 to 1 with a 9 in. uninsulated lining. Fig. 6 shows the assumed temperature gradients for the kiln gases, the inside surface of the refractory lining, and the material being processed. The product is high-calcium lime. There is no coating on the surface of the kiln lining between 80 ft. and 175 ft. from the discharge end of the kiln.

Table I shows the data computed from the kiln lining surface temperature for a 6 in. lining, a 9 in. lining, and a lining consisting of 7 in. of refractory block and 2 in. of high temperature insulation between the block and the kiln shell. The study will be made for that section between the feed end of the kiln and 80 ft. from the discharge end. The heat conductivity of the refractory kiln blocks has been taken as 11 B. t. u. sq. ft./inch/hr./deg. F. temperature difference. That of the high temperature insulating material has been taken as 0:55 B. t. u./sq. ft./inch/hr./deg. F. temperature difference.

The following Table II shows how these figures look in terms of B.t.u.'s lost per hour for each 10 ft. length of the 9 ft. kiln, and the equivalent pounds of coal required to supply this loss.

TABLE I—COMPARISON OF TEMPERATURES WITH AND WITHOUT INSULATION

Ft. from discharge end	Av. kiln wall temp. deg. F.	Computed shell temp., deg. F. 6 in.	9 in.	7 in.+2 in.	Computed shell heat loss B.t.u. sq. ft. hr. 6 in.	9 in.	7 in.+2 in.
80-90	1610	552	430	212	2106	1226	302
90-100	1500	520	405	202	1830	1069	275
100-110	1410	491	384	194	1612	966	253
110-120	1325	464	364	186	1442	867	231
120-130	1250	440	346	179	1289	772	212
130-140	1175	417	326	172	1146	702	195
140-150	1115	398	314	166	1042	647	182
150-160	1060	381	301	161	949	597	170
160-170	1010	365	290	157	872	555	162

TABLE II—B.T.U. HEAT LOSS PER HOUR FOR EACH 10-FT. LENGTH OF SHELL, TOGETHER WITH EQUIVALENT POUNDS OF COAL

Ft. from discharge end	6 in. B.t.u.	6 in. Lbs. coal	9 in. B.t.u.	9 in. Lbs. coal	7 in.+2 in. B.t.u.	7 in.+2 in. Lbs. coal
80-90	597,000	44.2	346,000	25.6	85,500	6.3
90-100	518,000	38.3	303,000	22.4	77,800	5.8
100-110	456,000	33.7	273,000	20.2	71,600	5.3
110-120	408,000	30.2	245,000	18.2	65,400	4.8
120-130	364,000	26.1	218,000	16.2	60,000	4.4
130-140	324,000	24.0	198,000	14.7	55,200	4.1
140-150	294,000	21.8	183,000	13.5	51,500	3.8
150-160	263,000	19.8	169,000	12.5	48,100	3.6
160-170	246,000	18.3	157,000	11.6	45,900	3.4
Total		256.4		154.9		41.5

*Consulting Chemical Engineer, York, Penn.

TABLE III—USE OF HEAT IN INSULATED KILN

Ft. from discharge end	Temps. of stone, deg. F.	Temp. diff.	B.t.u. hr. required	Shell loss b.t.u. hr.	Total heat required b.t.u. hr.
80-90	1550-1420	130	875,000	346,000	1,221,000
90-100	1420-1250	170	1,143,000	302,000	1,445,000
100-110	1250-1050	200	1,345,000	273,000	1,618,000
110-120	1050- 870	180	1,210,000	245,000	1,455,000
120-130	870- 705	165	1,110,000	218,000	1,328,000
130-140	705- 550	155	1,042,000	198,000	1,240,000
140-150	550- 410	140	940,000	183,000	1,123,000
150-160	410- 270	140	940,000	169,000	1,109,000
160-170	270- 140	130	875,000	157,000	1,032,000

TABLE IV—TEMPERATURES IN INSULATED KILN*

Ft. from discharge end	Temps. of gases deg. F.	Temp. diff.	B.t.u. hr. lost
80-90	2098-1978	120	1,760,000†
90-100	1978-1868	110	1,730,000†
100-110	1868-1765	103	1,618,000
110-120	1765-1672	93	1,455,000
120-130	1672-1588	84	1,328,000
130-140	1588-1509	79	1,240,000
140-150	1509-1437	72	1,123,000
150-160	1437-1366	71	1,109,000
160-170	1366-1300	66	1,032,000

*Specific heat of 0.23 for kiln gases, 68,400 lbs. of combustion and evolved gases per hour. †Excess heat being used in calcining.

TABLE V—DIFFERENCE IN USEFUL HEAT LOST IN NON-INSULATED AND INSULATED KILNS

Ft. from discharge end	Heat loss diff. b.t.u. hour	Possible production increase due to heat difference—percent Keeping kiln gases temps. as before	Temp. the kiln gases will be raised if production is not increased deg. F.
80-90	260,500	29.20	16.5
90-100	224,200	19.65	14.3
100-110	201,400	14.95	12.8
110-120	179,600	14.80	11.5
120-130	158,000	14.25	10.0
130-140	142,800	13.70	9.1
140-150	131,500	14.00	8.4
150-160	120,900	12.85	7.5
160-170	111,100	12.70	7.0
			97.1

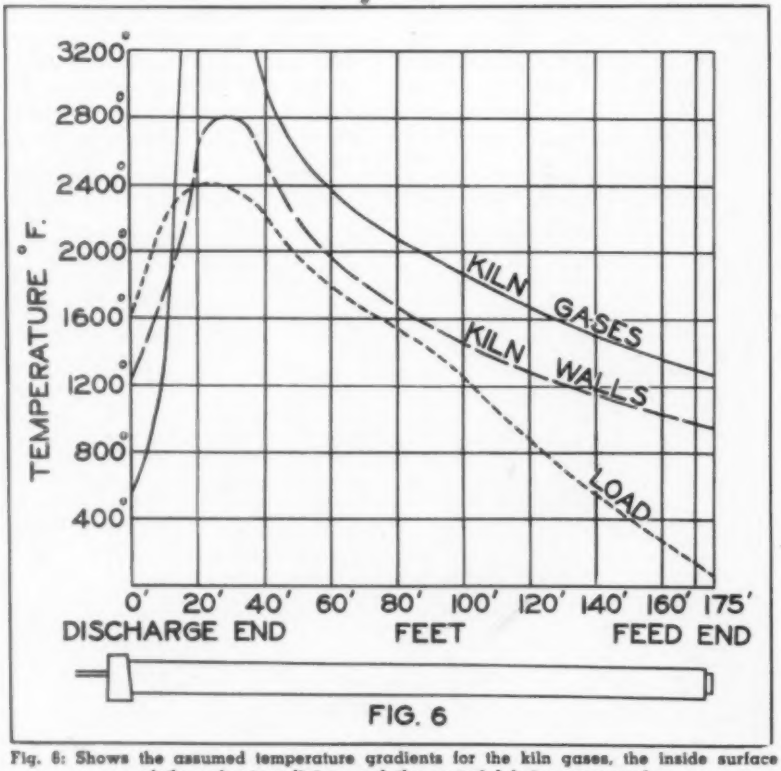


FIG. 6

Fig. 6: Shows the assumed temperature gradients for the kiln gases, the inside surface of the refractory lining, and the material being processed

Table II shows that, for the 6 in. uninsulated lining, the heat loss is equivalent to 256.4 lbs. of coal per hour, or about 6,150 lbs. (3.075 tons) per day. At $4.75 per ton delivered to the kiln, this loss is costing, in fuel alone, about $14.60 per day. The 9 in. uninsulated lining in the section considered has a heat loss equivalent of 154.9 pounds of coal per hour, or about 3,720 lbs. (1.86 tons) per day which costs about $8.84 per day for fuel to supply this loss. The 7 in. block backed up with 2 in. of high temperature insulation has an equivalent heat loss of 41.5 lbs. of coal per hour or about 996 lbs. (0.498 tons) per day at a cost of 2.36. Thus between the insulated lining and the 9 in. uninsulated lining there is a difference of $6.48 per day, and compared with the 6 in. uninsulated lining this difference is $12.24 per day. Later it will be shown that it depends upon the method of operating the kiln whether or not full advantage of this saving is realized.

Now there is the question of what becomes of this heat that, by insulating the lining, no longer can escape through the kiln shell at the chosen section. Will it inevitably cause a higher exit gas temperature, as some surmise? We shall see. The comparison will be made between the uninsulated 9 in. lining and the 7 in. + 2 in. insulated lining.

Table III shows the computed heat load to raise the temperature of the stone as it passes through the chosen section of the kiln with the 9 in. uninsulated lining.

This heat is being supplied by the hot kiln gases, and the derived heat quantities and the assumed temperatures involved with these kiln gases are shown in Table IV.

Table V shows the difference between the heat losses through the shell for the 9 in. uninsulated lining and the 7 in + 2 in. insulated lining over the chosen section, and how this available heat can be used.

Thus we see that this heat prevented from escaping through the kiln shell can be used either to increase the production rate, or it can be allowed to go to waste as increased-temperature kiln gases. Surely the latter course will not be elected, when so much good can be accomplished simply by turning the kiln about 12 percent faster than its normal operating speed without the insulated lining.

(To be continued)

Specifications for Portland Pozzolanas

Part 2: Tests of portland cement — diatomaceous earth blended products show no improvement over portland cement alone if later ages and durability are considered.

By ALTON J. BLANK*

SINCE making the tests, described in Article I, the writer, in order to determine the influence of different varieties of diatomaceous earth, when ground with a given portland cement, conducted a second series of tests at a second cement factory where the cement manufactured was of the normal portland type.

The portland cement used in the tests had the following characteristics:

Chemical Analysis		Physical Tests	
SiO_2	21.02%	Fineness No. 200 M	93.0%
Al_2O_3	7.23	Fineness No. 325 M	81.0
Fe_2O_3	2.46	Specific Gravity	3.13
CaO	63.39	Initial Set	1 hr-55 min.
MgO	2.27	Final Set	4 hr-40 min.
SO_3	2.02		
Loss	1.06		
Free Lime	0.65%		

The five types of diatomaceous earth used in these tests, had the characteristics shown in table below.

Eliminating the fact that the tensile strength test is not the proper measurement of the strength qualities of a cement, it is found that the blended cements shown below, consisting in the grinding of a standard portland cement with various types of diatomaceous earth, give various strength yields, none of which are exceptional when compared with the strength of the Portland cement itself.

Perusal of data pertaining to these and other tests made by the writer have not shown that a product composed of a blend of portland cement with diatomaceous earth is an improvement over the portland cement itself if later ages and durability is considered. In other words, portland cement/diatomite blends are less durable than portland cement. It is true, that in some cases blended cements of this type yield high early strength, but this is found not to be of a permanent nature.

	Diatomite (a)	Diatomite (b)	Diatomite (c)	Diatomite (d)	Diatomite (e)
SiO_2	83.60%	74.22%	74.68%	83.26%	81.44%
R_2O_3	6.48	15.86	18.48	4.78	6.02
CaO	1.21	2.43	0.69	3.61	1.07
MgO	1.24	1.07	0.51	1.24	0.63
Fineness					
No. 200 M	93.7	93.0	79.0	96.0	99.5
No. 325 M	93.2	82.0	71.0	88.5	98.5
Specific Grav.	2.00	2.38	2.40	1.98	2.01
Type	Plastic	Granular	Granular	Plastic	Plastic

TABLE NO. 5: PORTLAND CEMENT GROUND WITH VARIOUS TYPES OF DIATOMITE

Parts Portland Cement	Type	Parts Dia. Earth	Tensile Strength Values at Ages Stated Below. 1:3 Sand 24-Hr.	3-Day	7-Day	28-Day	3-Mo.	6-Mo.	1 Year
1.00		0.00	100%	100%	100%	100%	100%	100%	100%
0.95	(a)	0.05	87	86	86	96	92	87	80
0.90	(a)	0.10	87	60	72	87	68	60	57
0.95	(b)	0.05	99	83	91	96	80	72	70
0.90	(b)	0.10	92	93	90	94	89	75	75
0.95	(c)	0.05	82	76	94	105	86	84	79
0.90	(c)	0.10	80	89	79	99	91	88	83
0.95	(d)	0.05	80	69	70	64	68	71	64
0.90	(d)	0.10	51	51	57	62	54	50	50
0.95	(e)	0.05	88	80	89	73	80	81	72
0.90	(e)	0.10	72	57	71	67	66	66	51

It is true, generally that blends of this type are more plastic and workable than standard portland cement. It is also true that blends of this type are usually more resistant to the action of alkali ground and sea waters and have better waterproofing qualities than portland cements.

It would appear, however, that the initial advantages in strength of blends of this type is secured at the expense of durability.

I have found that the heat of hydration of portland cement/diatomite blends is little different from the heat of hydration of the portland cement used in making the blend.

In such cases where the proportion of diatomite in the blend is in excess of that used in common practice, the lower heat of hydration is usually found to be directly proportional to the amount of portland cement displaced.

In portland cement/diatomite blends, volume changes are found to be greater than with portland cement itself, regardless as to whether the diatomite has been used in its raw state, or has previously been calcined, and this feature in itself limits the amount of diatomite that may be ground in with portland cement.

Summed up, blended cements of the type heretofore described, though having properties that are desired in certain concrete constructions, are limited to these fields and cannot be considered for general purpose use.

Tests of Portland Cement—Hydrated Lime Blends

Using the same portland cement as in Table No. 5, the writer made a second series of tests in which varying amounts of hydrated lime were ground with the cement to arrive at

* Executive vice-president, Cementos Atoyac, S. A., Puebla, Puebla, Mexico.

a portland cement/hydrated lime blend.

Again, eliminating the fact that tensile strength is not the measurement for strength qualities in a cement, it will be seen that the blends described before, do not give the strength yield of portland cement by itself. All of the blends were plastic and more workable in direct proportion to the portland cement displaced by the hydrated lime.

Blends of this type are not considered as having high strength properties, but are found to have certain waterproofing advantages when in contact with ordinary water, but are not found to be resistant to alkali ground and sea waters.

Blends of this type do not appear to show lower heats of hydration, but have greater volume changes than ordinary portland cements. I have not found blends of this type more durable than portland cements. In fact, they have shown considerably less durability.

Summed up, the portland cement/hydrated lime blends, while having waterproofing plasticity and workable features, desirable in some types of work, cannot be considered as suitable for the general concrete constructions. They are less durable than other types of blended cements.

In the development of the Blank basic patent; namely, U. S. Patent No. 1,912,883, a great many preliminary experiments and tests were necessarily carried out. Previous tests made over a period of years did not show that the portland/diatomite/hydrated lime blends had any general advantages over standard portland cement.

Initial tests revolved around the use of hydrated lime, a product having feeble hydraulic properties, and diatomaceous earth, a material having no hydraulic properties.

Upon grinding these two materials together in a small laboratory tube mill, the resulting product was found to possess strength and setting properties to a small degree. Upon heating the mill during the grinding procedure these strength and setting properties were accelerated.

Further tests in this connection revealed the necessity of both heat and moisture conditions being maintained during the grinding procedure. For example, a mixture of, roughly, 2 parts hydrated lime and 1 part diatomite resulted in a product having an insoluble residue content of 26.7 per cent, but upon boiling this mixture for several hours the product was found to contain only 9.5% of insoluble residue, suggesting the necessity of heat and moisture for further reactions between lime with silica, alumina, etc.

Thus, taking a mixture composed of, roughly, 2 parts of hydrated lime with 1 part of diatomite, and grinding these materials together in 5 x 22 ft. tube mill, and maintaining controlled moisture and temperature conditions, a product was obtained having the following physical characteristics:

Fineness, 200 Mesh	97.5%
Initial Set	5 hrs - 40 min
Final Set	15 hrs - 35 min
Specific Gravity	2.25

Age	Tensile Strength 1:3 Sands, lbs. per sq. inch
24 hrs	38
3 days	70
7 days	178
28 days	449

Similar tests were carried out with various types of siliceous and argillaceous materials available locally, as well as with various grades of hydrated lime.

Somewhat better results were obtained by hydrating caustic lime in the presence of the siliceous material during the grinding procedure. Better results were obtained by previously hydrating the lime in the presence of the siliceous material in a specially constructed hydrator, and then grinding the moist-heat-reactive mixture to the desired fineness in the tube mill under controlled conditions. Generally, the higher the temperature maintained during the hydration and grinding procedures, the greater the reactions and the higher the strength of the resulting product.

Produce Masonry Cement

Products thus obtained were found to be especially adapted for use in the masonry construction field. Further experiments whereby portland cement clinker was ground with the hydrated mixture, resulted in products having accelerated setting and strength properties.

Thus, the masonry cement produced in the Landa plant consists of a mixture of caustic lime and volcanic river sand, which after hydration is ground with 8 to 12% of portland cement clinker, under moist and controlled temperature and fineness conditions. Our "Atoyac" cement, equal in quality to the best portland cement, consists of a mixture of caustic lime hydrated in the presence of volcanic river sand, and ground with about 60% of portland cement clinker under the controlled conditions involving moisture, heat and fineness of product.

TABLE NO. 6: PORTLAND CEMENT GROUND WITH VARYING AMOUNTS HYDRATED LIME.

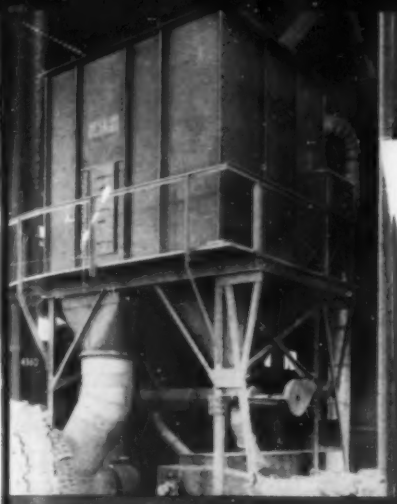
Parts Portland Cement	Parts Hydrated Lime	Tensile Strength Values at Ages Stated Below. 1:3 Sand 3-Day	7-Day	28-Day	3-Mo.	6-Mo.	1 Year
1.000	0.000	100%	100%	100%	100%	100%	100%
0.975	0.025	89	97	93	90	90	82
0.950	0.050	85	84	87	86	74	71
0.925	0.075	77	79	85	80	76	74
0.900	0.100	72	83	83	70	71	67
0.850	0.150	82	82	86	78	64	62
0.800	0.200	80	82	71	73	60	60

Initial reactions are obtained between the lime with the silica, alumina, etc. of the sand during the hydration stage, and continued during the grinding stage of the process. The clinker acts as a catalyzer, or energizer, resulting in the further promotion of compounds during the grinding procedure. The clinker during this period, probably loses its identity as such.

As you are aware, there has been a great deal of talk in the cement industry concerning insoluble lime silicates. I do not know of any absolute proof that such silicates have setting or strength properties. There are, of course, insoluble lime silicates in a variety of materials as produced by nature, but upon grinding these materials to a powder, the resulting product has no setting or hardening properties in the sense as we know them.

By my process I claim to produce these insoluble lime silicates, and with the addition of cement clinker (or soluble lime silicates) there is a reaction between the two, the clinker acting as a catalyzer, and giving accelerated results to the product that are comparable to portland cement. Thus, the hydration of caustic lime in the presence of siliceous materials in their finely divided state, forms an insoluble calcium silicate whose formation is promoted by grinding under moist-heat conditions to the desired fineness. Upon grinding portland cement clinker (soluble calcium silicates) with the reacted lime/silica mixture, new compounds are formed which result in products that are

(Continued on page 66)



Sly Dust Filter in a Cement Plant Bag House

One of several Sly Dust Filters on a Cement Mill Bag House

Sly Dust Filter on a Cement Plant Finish Mill

SLY DUST CONTROL

Dominates IN THE CEMENT INDUSTRY— AND THROUGHOUT THE ROCK PRODUCTS FIELD

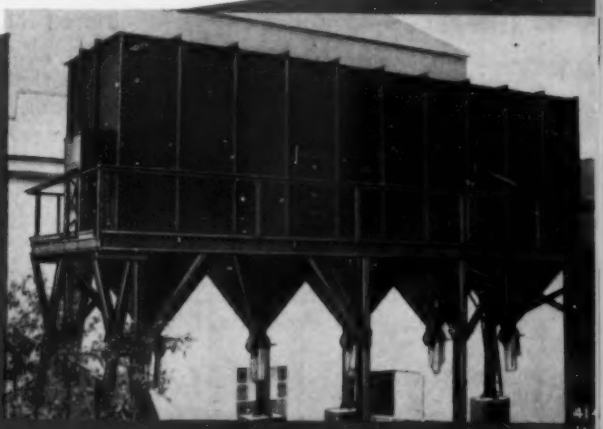
IN the cement mills of United States and Canada, also South America and Australia, there are more Sly Dust Filters, by far, than any other make (estimated at four times as many as the next most popular make).

These filters collect fine dust that would otherwise be scattered over everything and everybody. They protect workmen and eliminate dust wear on machinery bearings and gears.

Sly Dust Filters offer exclusive advantages: greater filtering capacity, power savings, automatic control, and savings in maintenance and operation. They soon repay their cost.

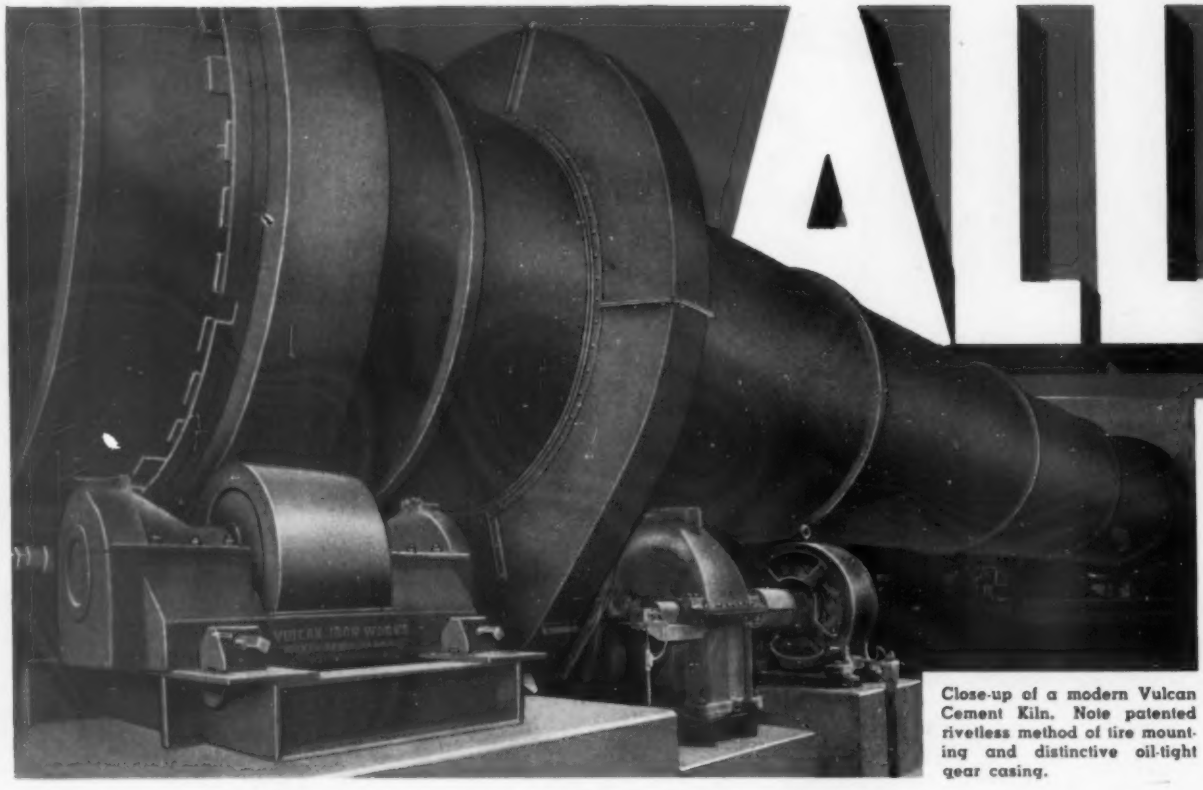
Write us fully so that we may analyze your problem and tell you exactly what can be accomplished.

THE W. W. SLY MFG. CO.
Cleveland 2, Ohio
4746 Train Avenue



★ Sly Dust Filter in a Feldspar Quarry and Mill

Sly Dust Filter in a Rock Crushing Plant



Close-up of a modern Vulcan Cement Kiln. Note patented rivetless method of tire mounting and distinctive oil-tight gear casing.

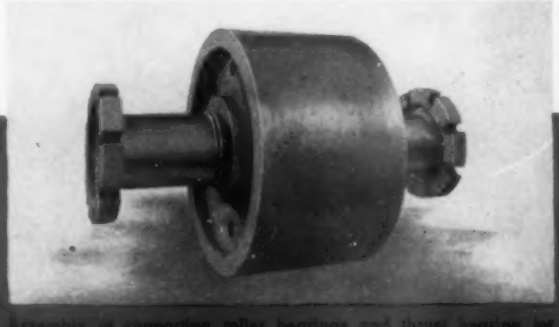
Nearly Fifty Years of Successful Experience assures Efficient Results at Lowest Operating Costs

Vulcan not only designed and manufactured the first really successful rotary kilns, coolers, dryers, retorts, etc. used in this country, but has led the way ever since—for nearly half a century—in their further development and improvement; taking full advantage at all times of every proved advance in materials, manufacturing methods and accessory equipment.

During this long period thousands of installations have been made in practically every phase of the Rock Products, Metallurgical and Chemical-Processing Industries—covering every conceivable requirement for calcining, cooling, drying, roasting, leaching, dehydrating, etc.

The vast fund of accurate operating and performance data thereby acquired by Vulcan engineers, through practical experience and close cooperation with other engineering organizations, is always available to prospective purchasers of Vulcan equipment and constitutes your best possible assurance of satisfactory results at lowest ultimate expense.

Assembly of roller, shaft and oil buckets for Vulcan Rotary Kiln. Roller is 48 to 58 carbon steel cast in our own steel foundry and shrunk on the massive forged-steel shaft. Rollers are



Assembly of supporting roller bearings and thrust bearing for Vulcan Rotary Kiln. Journal bearings have 120-degree bushings at right angles to direction of pressure, and are automatically

VULCAN KILNS

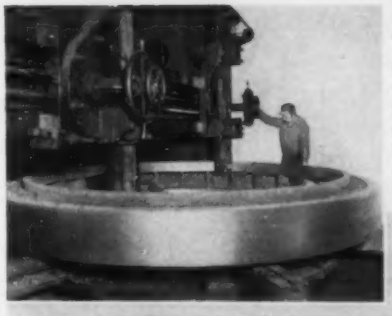
ARE DESIGNED BY OUR OWN ENGINEERS AND BUILT ENTIRELY IN OUR OWN SHOPS

SHELLS can be of any diameter up to the limit of railroad clearances and of any required length. Unless otherwise specified all shell joints are U-grooved and automatically welded. All circular joints and reinforcements are fillet welded on both sides. Tire sheets are single, extra-heavy, steel plates—thereby eliminating the usual necessity for several separate reinforcing bands.

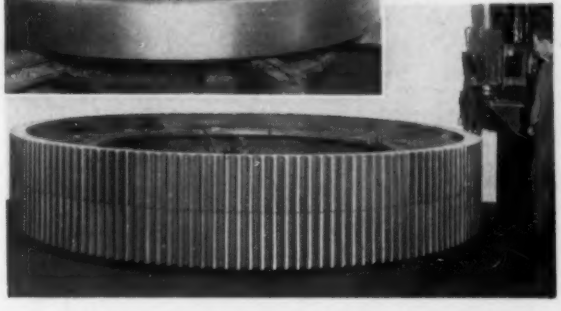
TIRES AND ROLLS are cast in our own foundry from .40 to .50 carbon steel and heat-treated to develop the best possible combination of toughness and hardness for the severe service required. All machining, and assembling of the complete supporting roller bearing—as illustrated on opposite page—is done in our own shops under the vigilant supervision of experienced engineers and production executives who check every item for accuracy of dimensions and alignment.

RING GEARS AND PINIONS are also cast in our own foundry from .40 to .50 carbon steel and machined in our own shops—thereby eliminating many delays and difficulties commonly experienced by other manufacturers with less complete facilities. The enclosed type of motorized driving gear now generally used is built to our order by a leading manufacturer of precision-cut herring-bone gears and is carried on a heavy, welded, structural-steel base which assures accurate alignment with the main pinion.

REPLACEMENT PARTS for any Vulcan Rotary Kiln, Cooler, Dryer, Retort, etc., are always readily available, under normal business conditions, and can be supplied under present conditions to concerns having an adequate priority rating. We are also prepared to furnish tires, rolls, gears, etc. for many other types of rotary kilns, on the same basis.



Turning cast-steel tire for 10 ft. diameter rotary cement kiln in Vulcan machine shop. Much larger tires can be cast in our steel foundry and machined on our large boring mills.



Two 16-in.-face ring gears for 10 ft. diameter rotary cement kiln being cut simultaneously in Vulcan machine shop. Spur gears up to 20 ft. pitch diameter and 40-in. face can be cut on this machine. Smaller gears are cut on automatic machines of a different type.

OTHER VULCAN PRODUCTS include Crushing Rolls, Pulverizers and Grinding Mills; Briquetting Machines; Electric Hoists; Shaking-Chute and Chain Conveyors; Steam, Gasoline, Diesel and Diesel-Electric Locomotives. Write for Bulletin A-375.

Vulcan Steel Foundry. This modern open-hearth foundry is fully equipped to make carbon- or alloy-steel castings up to 35,000 lbs. in weight.

VULCAN IRON WORKS

Established 1849

Main Office and Works, WILKES-BARRE, PA.

New York Office, 50 Church St

Segmental Shield *Prolongs Life* of Alloy Kiln End Nose Ring

The advent of segmental nose rings made of heat resistant alloy, designed by Amsco engineers (U.S. Patent 2,089,026), avoided kiln end enlargement from "growth," and, because bricks were properly retained, reduced shut downs.

Further study has shown that most of the metal scrapped from such ring segments is discarded because of deterioration of flange edges only. The small segmental shield, also made of Amsco Alloy, shown in our sketches, cures this trouble. They cost much less than ring segments proper and can be easily replaced without disturbing the nose ring or the brick.

The consequent longer life of alloy nose rings not only assures more continuous operation of kilns, but also saves metals hard to get right now.

The details in figures 1 and 4, reproduced from U. S. Patent No. 2,321,217, are identified as follows:

2. Steel kiln shell proper.
4. Alloy segmental nose ring.
12. Brick or refractory liner.
16. Alloy segmental shield.
28. Alloy pin holding shield segment to ring segment.

Additional information concerning these devices will be given on request.

Fig. 4

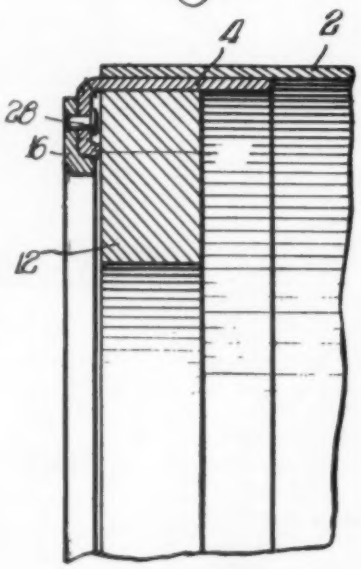
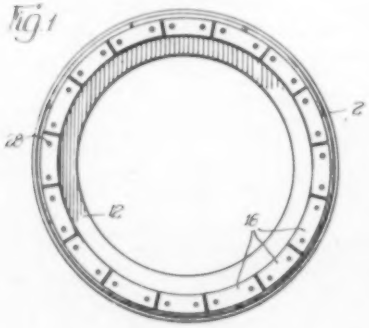


Fig. 1



Send for new 32 page Bulletin 1043-CM, Amsco Manganese Steel for Cement Mill Equipment, which includes a section on Amsco Alloy Heat & Corrosion Resistant Castings.

Amsco
AMERICAN MANGANESE STEEL DIVISION
Chicago Heights, Illinois
FOUNDRIES AT CHICAGO HEIGHTS, ILL.; NEW CASTLE, DEL.; DENVER, COLO.; OAKLAND, CALIF.; LOS ANGELES, CALIF.; ST. LOUIS, MO.
OFFICES IN PRINCIPAL CITIES

AMERICAN Brake Shoe COMPANY

Chemists' Corner

(Continued from page 62)

found adaptable for all uses, and under various conditions to which cements are put. Variations in control exercised during the processing, and in the amounts of lime proportioned with siliceous or argillaceous materials, as well as variations in moisture content, temperature, time limit of hydration and grinding, fineness, etc., permit a wide variety of products.

Insofar as specifications are concerned, cements produced by the Blank Process for competition with portland cements, differ only as to insoluble residue content, and the definition, "Portland cement is the product obtained by finely pulverizing clinker produced by calcining to incipient fusion an intimate and properly proportioned mixture of argillaceous and calcareous materials, with no additions subsequent to calcination excepting water and calcined or uncalcined gypsum". For portland-pozzolan cements, and with the above exceptions, the same specification now applying to portland cement could be used. These specifications could be extended to cover portland-pozzolan cements having low heats of hydration, plastic cements, cements featuring durability, high early strength, quick setting cements, and masonry and plastering cements.

Returning to the question of cements, as a whole, it appears necessary that a distinction be made between my interpretation as to what constitutes a "blended" cement.

What Is Blended Cement?

For example, two or three portland cements, manufactured from different raw materials, by wet or dry processes, may be mixed or ground together, and, in one sense, come under the heading of "blended" cement. Or, portland cement may be ground or mechanically mixed with clays, slags, shales, limestone, limes and a variety of other materials and still come under the heading of "blended" cement. Or, any adulteration of materials may be made to portland cement, through mixing or grinding, and the product be correctly termed as "blended" cement. On the other hand, a cement, or cements such as those produced under the Blank process, are necessarily "processed" cements, and not "blended" cements, nor mechanical mixtures or grinds of adulterated materials. Further in this vein I refer to Blank patent issued under Serial No. 644,083. (NOTE:—This re-

ferred to patent issued at U. S. Patent No. 1,953,924 under date of April 10, 1934, and was followed later by U. S. Patent No. 2,125,281 issued August 2, 1938. About the same time U. S. Patent 2,028,386 was also acquired by Cement Process Corporation).

Aside from the procedure followed in Patent No. 1,912,883, a number of experiments have been carried out with various salts and chemicals with the object in mind of speeding up the reaction between the caustic lime with the siliceous and argillaceous materials, during the preliminary hydration stage of the process. It has been found that small percentages of sodium chloride, calcium chloride, sodium carbonate, sodium hydroxide, tannic acid, or other chemicals, when dissolved in the water used for the hydration of the lime, speeds up reactions between the lime with the silica, alumina, etc. in the hydrator, as well as in the tube mill during the grinding procedure, under the controlled conditions maintained, and accelerate the formation of compounds which contribute to setting and strength properties in the final product.

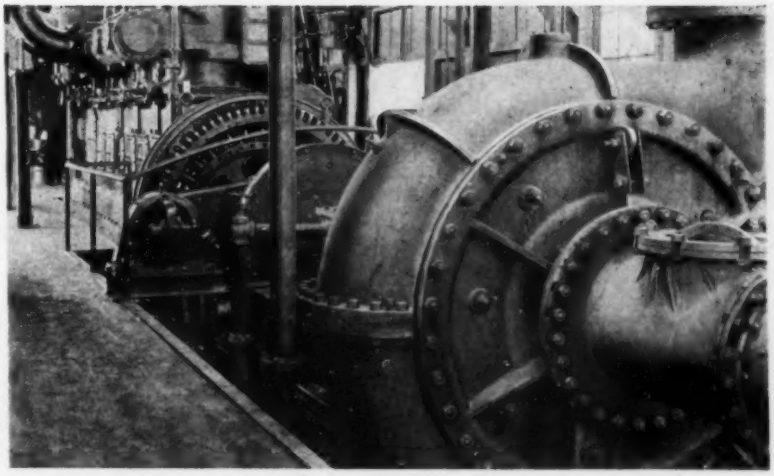
For example, caustic lime is hydrated in the presence of tripoli and ground under the controlled conditions embodied in the process. Tensile strength results upon 1:3 sands in one day is 33 p.s.i. and at 28 days has reached 141 p.s.i.

Dissolving sodium chloride in the water used for hydration purposes and to whatever water added during the tube mill grinding, in the amount of 1% sodium chloride to 99% water, results in the final product having a 1:3 tensile strength at 1 day's age of 47 p.s.i., and a strength of 230 lbs. at age of 28 days. This and other salts have been found to greatly accelerate the reactions desired.

Thus, products resulting from following this second processing, could hardly, as in the case of the basic process, be considered as "blended" cements.

Road Builders Pick Chicago

AMERICAN ROAD BUILDERS' ASSOCIATION will hold its annual convention at the Edgewater Beach hotel, Chicago, February 1, 2, and 3, according to an announcement from Charles M. Upham, engineer-director. The program will emphasize three major problems: the present highway transportation crisis caused by highway material and manpower shortages; the A.R.B.A. Postwar Highway Plan; and the postwar construction equipment problem.

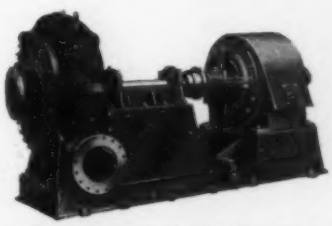


Are Your Pumps Free from

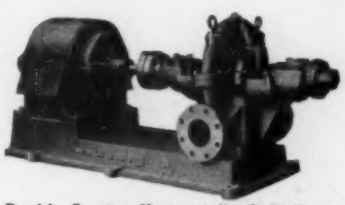
cavitation?
confrication?
caducity?

CAVITATION . . . eddy currents that reduce hydraulic efficiency; CONFRICATION . . . friction that reduces mechanical efficiency; CADUCITY . . . troubles that accompany old age . . . these weaknesses cause unsatisfactory operation of centrifugal pumps.

You can secure freedom from them by using Morris Pumps, because Morris designs are notable for their high overall efficiency, long life and dependable service. The Morris features that secure and maintain thoroughly satisfactory centrifugal pump operation are described in bulletins which will be sent on request.



Heavy-Duty Lined Dredging Pump



Double Suction Horizontally Split Pump for Clear Liquids

MORRIS MACHINE WORKS
Baldwinsville, N. Y.

MORRIS
ESTABLISHED 1864

Export Office:
50 CHURCH STREET
New York 7, N. Y.

CENTRIFUGAL PUMPS

Move All Materials by Gravity

Janesville Sand and Gravel Co., sells substantial volume of its products as ready mixed concrete

By RALPH S. TORGERSON

All aggregates and cement dumped by truck into compartments of bin feeding material to ready mixed concrete batcher. Sand and gravel plant shown in the background

FOR MANY YEARS the Janesville Sand and Gravel Co., Janesville, Wis., has been one of the largest producers of sand and gravel in southern Wisconsin and is perhaps the oldest producer in the State today. One of its most recent additions to the plant is the ready mixed concrete batching equipment shown in the illustrations.

This plant has several interesting features which might well be studied by sand and gravel producers planning to add new ready mixed concrete facilities. Through the years, this company has taken material from an almost inexhaustible glacial deposit of exceptionally clean sand and gravel. As a result the pit has an average depth of about 100 ft. Long belt conveyors extend to every section of the pit. This company was one of the first sand and gravel producers to use belt conveyors to transport materials to the plant.

When it was decided to put in a new concrete batching plant, the company took advantage of the terrain and erected the plant in the sand and gravel pit near the company's office, shop and garage buildings. As the cost of moving materials is an important factor in any operation, this location reduced handling of sand, gravel and cement to a minimum by utilizing gravity for the flow of materials through the batching plant. Because the company's sand and gravel plant bins are a very short distance away, the batching plant bins can be easily filled by backing the loaded trucks up over a

(Continued on page 70)

Left: One of the mixer trucks taking on water while batch is dumped into drum. Right: Hopper used at the site of big jobs to receive mixer truck load in case of delays. In the left corner may be seen part of platform for handling bulk cement from cars to trucks

Truck-Mixers and Trucks **FOR SALE–**

Modern Mixers Mounted on Heavy Duty Trucks

PROMPT DELIVERY

We own and offer FOR SALE from our own Fleet the following CONCRETE MIXERS, with separate engine drive, mounted on suitable HEAVY DUTY TRUCKS in EXCELLENT OPERATING CONDITION.

3 3½ cubic yard 1940 BLAW-KNOX Horizontal Discharge Truck Mixers mounted on model D-246-F tandem drive 1939 INTERNATIONAL or on 1940 BROCKWAY model 220X or on 1941 FORD with GRICO tandem drive axle unit.

1 3½ cubic yard 1940 RANSOME Horizontal Discharge Truck Mixer mounted on model D-246-F tandem drive 1939 INTERNATIONAL.

7 3½ cubic yard 1939 REX Horizontal Discharge Truck Mixers. 4 mounted on model D-246-F tandem drive 1939 INTERNATIONALS and 3 mounted on 1940 BROCKWAYS model 220X.

2 3 cubic yard 1941 REX Horizontal Discharge Truck Mixers mounted on model WA 2064 tandem drive 1941 WHITES.

4 4 cubic yard 1940 JAEGER Horizontal Discharge Truck Mixers mounted on model WA 2264 tandem drive 1940 WHITES.

CONSERCO, INC.

CONCRETE MIXER-TRUCK RENTAL SERVICE

1600 SOUTH CAPITOL STREET WASHINGTON 3, D. C.
PHONE • ATLANTIC 9055 LONG DISTANCE 1200

Batching

(Continued from page 68)

ramp and dumping into the bins.

Bulk cement also is dumped by trucks in the same manner. Cement is received in box cars on a siding near the plant and is scooped out of the car over a wooden platform built adjacent to the track on the same level as the freight car floor. Below the platform the ground has been excavated to a depth sufficient for ample clearance of a dump truck to receive the cement from the box car. The inclined ramp below the platform has been paved with concrete.

The four-compartment steel batching plant and weighing equipment was supplied by Butler Bin Co. One compartment holds sand and two compartments hold gravel, a total capacity of about three cars. The cement compartment, which is protected by a wooden housing over the top, holds about 300 bbl. of cement. A Syntron vibrator facilitates emptying the cement hopper in batching out operations. Next to the batching plant at the pit floor level is a concrete block structure housing the boiler which supplies live steam by piping into coils in the compartments for aggregates. An oil heater is used to heat the water.

Mixer truck equipment includes one 3-cu. yd. and two 2-cu. yd. Jaegers mounted on General Motors chassis. Mixer trucks have a comparatively easy grade down into the pit over a well-maintained road. Water is supplied to the mixer truck tanks from two drums containing about 500 gal. of water supported from the abutment pier of the plant backing up the pit slope.

The ready mixed concrete is sold principally within a short radius of Janesville, Wis., but the company is equipped to take care of large contracts at considerable distance from the plant. A steel dumping hopper is used at large contract jobs to permit dumping a load of concrete if the contractor is not ready for the load. This prevents unnecessary delays to mixer truck equipment. In addition to jobs in the city, the company makes many deliveries to farmers for barn floors and other agricultural buildings.

Officers of the company are J. K. Jensen, president; J. R. Jensen, vice-president; and G. F. Ehrlinger, secretary-treasurer.

Crushing Rock

CAN'T FAZE THIS HARD-FACED ROLL

SHATTERING stone, crushing rock,—here is a torturous task that requires impact and abrasion resistance of the first order. And this single roll crusher has it! Its fluted, toothed surface is made super-resistant to wear by an armor of Coast Metals Hard-Facing!

When a surface that has been Coast Metals hard-faced eventually does wear, it can be restored *good as new* by another hard-facing application. This can be continued repeatedly. Better yet, —hard-face your new parts, surfaces or edges with Coast Metals and they will wear many times longer!

Coast Metals Hard-Facing is today's wartime answer for effectively maintaining all your equipment,—from buckets, crushers, conveyors, and mixers to mills, hammers, shredders and pulverizers. Application is either by electric arc or gas torch. Write for Form R-301.

COAST METALS, INC.

Plant and General Offices: Canton, Ohio • *Executive Offices:* New York 19, N.Y.

COAST METALS *hard-facing weld rods*

MAKE YOUR EQUIPMENT LAST LONGER

National Gypsum News

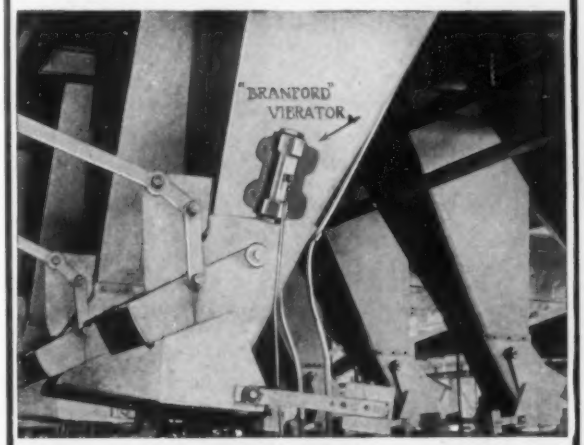
A NEW 12-pp. monthly magazine, 8½ x 11 in., has been started by the National Gypsum Co., Buffalo, N. Y. J. Nugent Lopes is director of public relations of the company. It is particularly attractive in appearance and contains much really interesting material, as for example that captioned "Talented Tinker," a part of which is as follows:

"A talent for tinkering is claimed by most men. Some turn it to very good use, as did Henry J. Wolfe, mechanic at the Akron, New York, plant.

"Henry has developed five time-and-labor saving devices. In 1928, he constructed and installed a mechanical transfer table to move wallboard from machine to kiln. Experts had said the job was impossible; Henry proved it wasn't. The same year, he devised and built an automatic interlocking proportioning scale to feed retarder to batch when mixing wall plasters. In 1929, he produced an idea for a machine for building gypsum lath. Next, came an improvement of the hopper sides on the board machine which fold the paper for the edge of the board and are self-cleaning, resulting in time and material savings. Latest of Henry's inventions is the automatic machine for producing Floating Wall Nails."

That is interesting because it bestows credit where credit is due, and because it is so typical of how American industry develops and progresses—not always because of designers and engineers, but because the average intelligent workman is "a tinker"—an embryo Henry Ford.

"BRANFORD" PNEUMATIC VIBRATORS



If you are interested in increasing the efficiency of your material handling equipment, we suggest you write us for data on our Vibrators for use on Hoppers, Bins, Chutes, Concrete Buckets, Screening Devices or in any place where bridging over or hanging up of material occurs.
Prevents costly damage to equipment by sledging; cuts down labor costs and increases production.
We also manufacture *Vibrators* for *placing concrete*—Pipe Forms, Tanks, slabs, joists, etc.

NEW HAVEN VIBRATOR CO.
145 CHESTNUT ST. NEW HAVEN, CONN.

FASTEST POURING

Almost Any Job of Concrete Can be Done Faster with JAEGER TRUCK MIXERS

"HIGH DUMP"

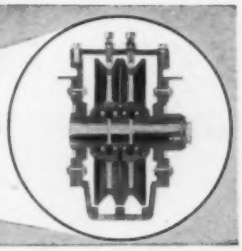
Millions of yards of Jaeger Truck-Mixed Concrete on major war work (exceeding the output of all other makes combined) prove the advantages of these motorized concrete plants. Nimble, flexible and fast, they speed placement, solve problem of extended or continuous pours.

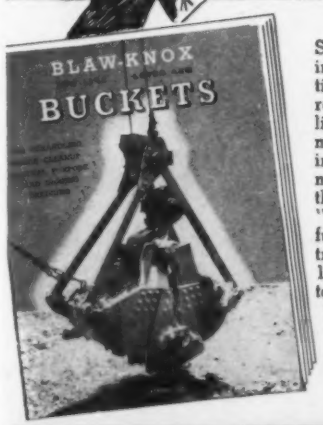
THE JAEGER MACHINE CO.,
603 Dublin Avenue
Columbus, Ohio

Mixers—Pumps—Hoists
Paving Equipment

or "LOW CHARGE" Type

BLAW-KNOX BUCKETS have SEALED BALL BEARING SHEAVES





Sealed ball bearing sheaves in the lever arm reduce lost time and expense of bearing replacement, increase cable life and reduce friction, materially improving operating efficiency. This, and many other better features, that make BLAW-KNOX the "wise" buy in buckets are fully explained and illustrated in NEW CATALOG 1757. Send for your copy today.

BLAW-KNOX DIVISION
of Blaw-Knox Company
Farmers Bank Bldg.
Pittsburgh, Pa.

29

BLAW-KNOX
BUCKETS

BLAW-KNOX BINS AND BATCHERS · ROAD FORMS · STREET FORMS · CONCRETE SPREADERS · TAMPING ROLLERS · VIBRATORS
CONCRETE BUCKETS · CLAMSHELL BUCKETS · TRUCK MIXERS · STRIPPING MACHINES · TURNTABLES · ROAD FINISHERS · STEEL FORMS

● Screening 60,000 tons of gravel per month is no easy job! — yet that is what a Link-Belt vibrating screen is doing in a Los Angeles, California, gravel pit!

Link-Belt Screens have proved themselves over the years in the effective screening of all types of materials. If you need a good screen — try Link-Belt.

9280

LINK-BELT COMPANY
2045 W. Hunting Park Ave., Philadelphia-40
Offices and distributors in all principal cities

SEND FOR CATALOG No. 1762

WRITE TODAY! LINK-BELT Vibrating Screens

NEARLY NEW CONCRETE BATCHING PLANT

Capacity 250-350 Cu. Yd. Per Hour . . . Available for Immediate Delivery

Complete Butler Concrete Plant. Excellent condition, used only 7 months. Adaptable for either commercial or construction use where high rate of concrete pour may be required. Equipped for manual, semi-automatic or automatic operational control. See details below.

BATCHING BIN. Bin—250 yd. capacity—190 yd. 3-compartment aggregate 400 bbl. cement.

2 BUTLER CEMENT STORAGE BINS. 2,000 bbl. capacity, 2-compartment, 3,000 bbl. capacity, single compartment. All bins equipped with air jets and steam jets.

BATCHERS. 1 Butler aggregate 5 yd. capacity, complete with beam-type scale, manual operation.

1 Butler cement 3,000 lb. capacity, complete with beam-type scale, manual or automatic operation.

1 Butler water batcher 200 gals. capacity, beam-type scale, complete with 400 gal. surge tank and valves, manual or automatic operation.

ELEVATOR & TRACK SCREW. 300 bbl. per hour capacity, screw 37 ft. long, equipped for either box car or hopper car cement delivery. Complete with 20 hp. electric motor.

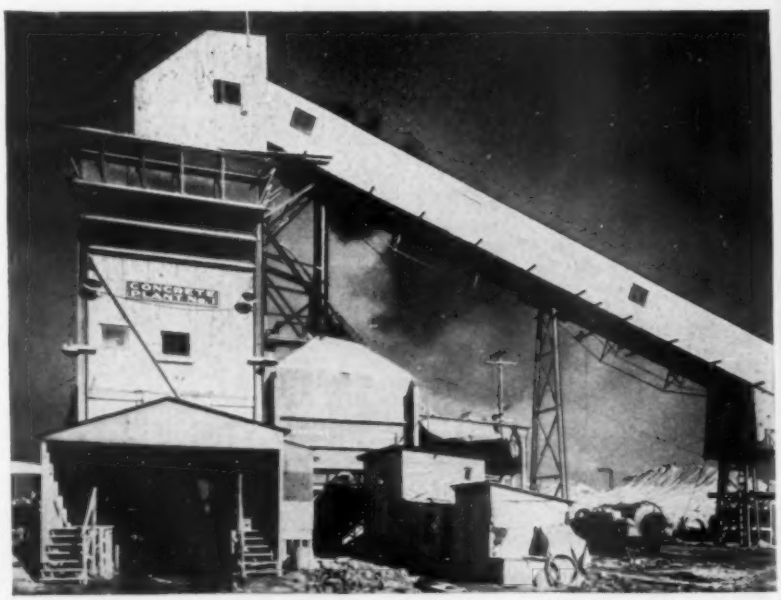
CONVEYORS. 1 Barber Greene 36" inclined conveyor 237 ft. long, equipped with: 50 hp. Century motor; one 40 yd. track hopper; one 20 yd. track hopper; one 20 yd. truck hopper. All necessary A frames, trusses and supports included. All hoppers equipped with discharge gates.

1 Barber Greene 36" horizontal conveyor 180 ft. long. Complete with 18 double clam-type fill valves, 20 hp. Century electric motor complete with trusses.

1 Barber Greene 36" inclined conveyor 60 ft. long. Complete with 15 hp. electric motor, trusses and supports.

All conveyors in excellent condition; two-way Alemite system of lubrication; band-type brake; pivoted distributor, ground level controlled. Conveyors operated under cover while in use. Idler take-up and return idler rollers in good shape. Extra length new 500 ft. belt available.

MISCELLANEOUS. Collecting hopper under batcher, 5 feet cement screw feeder complete with motor for automatic control of cement. Traveling hopper for charging batch trucks. Extra cement buckets, drive chain elevator chain for cement elevator and track screw, etc.



Also 28 Late Model Transit Mixers

12—1942 Model Jaegers—High discharge, separate engine drive with two-speed transmission. 8 mounted on 1942 Dodge six wheelers, good rubber, excellent condition.

10—1942 Model Smiths—High discharge type. These mixers were used only 6 months.

Also 6 — 1938 Model Smiths — High discharge type. 3 mounted on 1938 Autocars, 2 on Macks and 1 on White truck. All single axle drive in good condition, with good rubber.

MOTOR TRUCK SALES AND EQUIPMENT COMPANY

Telephone: CALUMET 1255

2435 COTTAGE GROVE AVENUE **CHICAGO, ILLINOIS**

CONCRETE PRODUCTS AND CEMENT PRODUCTS

Hurricane Proof Houses

Federal housing project near Miami, Fla., designed to resist hurricanes. Framing is of reinforced concrete columns and beams with concrete masonry walls. Block furnished by Maule Industries, Inc.

Hurricane-Proof Houses

Dinner Key housing project near Miami, Florida, comprises reinforced concrete columns and concrete masonry walls to resist high winds

With the tremendous influx of civilian and Navy personnel to the Miami, Florida area, the federal government had to take measures to relieve a severe housing shortage. One of the latest and most interesting housing projects is the Dinner Key construction. Dinner Key got its name from the early days when the little island was a midday meal stop for boats plying between Miami and Homestead, Florida.

Some unusual construction features are incorporated in the structures of this war-time housing project that may point to practices which will be followed in the post-war period. It will be noted that the two-story buildings have concrete foundations, and poured, reinforced concrete solumns and beams, affording a rigid construction which it is believed will withstand any stresses imposed by high winds.

All walls are being laid up with 8- x 8- x 16-in. concrete block. The buildings have been designed so that most of the window openings rest on what may be termed a beam block extending the full width of the opening and the full depth of a standard block instead of the usual sill. Provision is made for reinforcing rods above and below the window openings. Columns and beams each have four reinforcing bars. In addition to this reinforcing, at every third or fourth course the concrete block have a patented truss type steel reinforcement laid horizontally and grouted into the course. This reinforcement comprises two reinforcing bars with another rod bent at angles and welded thereto to form the connecting web between the parallel bars.

Miami Herald Photo

Close-up of concrete masonry construction, showing reinforced concrete columns and beams and the details of window opening

Roof and floor joists are of wood. To provide ample ventilation of the attic above the second floor, vents are placed at each end of the building and over a considerable length of the roof at the ridge a vent type cupola has been constructed. The concrete block construction and the provisions for ventilation it is anticipated will keep these structures comfortably cool during the warm period of the year. These new buildings replace some temporary, cheaply built cottages which were not suitable for all-year occupation.

Concrete block, made with crushed coral rock aggregate, were furnished by Maule Industries, Inc., Miami, Fla.

Miami Herald Photo

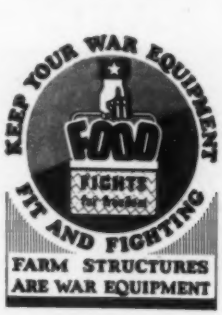
Above: Defense housing construction at Dinner Key nearing completion. Below: Construction view of the housing project

W.P.B. Abrasive Advisory

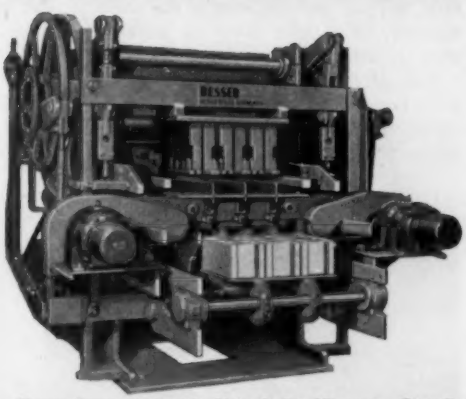
George Balcom, Abrasive Products, Inc., South Braintree, Mass., has been appointed a member of the coated abrasive Advisory Committee of the W.P.B. Other members of the committee are: James Jackson, Mid-West Abrasive Co., Detroit, Mich.; A. G. Bush, Minnesota Mining and Manufacturing Co., St. Paul, Minn.; Charles Knupfer, Carborundum Co., Niagara Falls, N. Y.; H. M. Elliott, Behr-Manning Corp., Troy, N. Y.; George Manning, Armour and Co., Chicago, Ill.; E. B. Gallagher, Clover Manufacturing Co., Norwalk, Conn.; Austin M. Porter, Wilmington Abrasive Works, Inc., Wilmington, Del.

Beauty That Stands Out
Quality That Stands Up

BESSER Vibrapac BETTER Concrete Masonry units are the choice of many leading architects for homes of distinctive style and all-time durability.



BESSER Vibrapac BETTER Concrete Masonry units offer new possibilities in the pleasure of planning and building new homes. They make possible revolutionary construction designs in all types of building structures with resulting new effects. Flexibility of this modern material makes easy the widest range of expression in designing the ornamental or modernistic, elaborate or conservative—and always with **beauty** and **permanence.**



Besser Super Automatic Plain Pallet Vibrapac. Capacity 600 8" x 8" x 16" per hour made 3 at a time on one pallet. Smaller units made in larger multiples on the same pallets. Power hoist makes off-bearing easy.

Important Patent Notice

Licensed under the Gelbman basic vibration patents.

Undirectional vibration licensed under Flam patents.

The Vibrapac combines vibration with exclusive patented Besser Plain Pallet principle.

BESSER MANUFACTURING CO.

212 Forty-Third St. • Alpena, Mich.

Complete Equipment for Concrete Products Plants

THE SAVING IN PALLET COST WILL PAY FOR A BESSER VIBRAPAC PLAIN PALLET STRIPPER

Converting Concrete Masonry Block into Precast Slabs

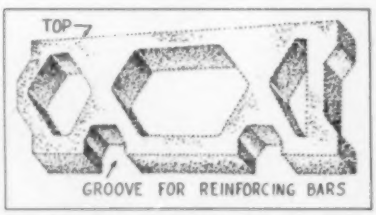
Cities Fuel and Supply Co., Milwaukee, Wis., has developed a new precast floor system combining concrete block into floor and roof slabs

By RALPH S. TORGERSON

Placing rod under tension in assembled concrete "plank" made of concrete block

FOR YEARS the concrete products industry has worked with the idea of developing masonry units which could be used like lumber to fit into any building plan. The concrete masonry units of today have very closely met every demand of the building contractor. To go a step farther, the Cities Fuel and Supply Co., Milwaukee, Wis., hit upon the idea of using concrete blocks to make any desired length of roof or floor slab. Several installations of the units already have been made in garages and industrial structures.

Basically this system (patents pending) consists of making special concrete masonry units of lightweight aggregate, having recesses for reinforcing rods. Waylite aggregate was used in the units under test. These units, which are 16 or 24 in. wide, 8 in. long and 4 to 6 or 8 in. deep, are assembled with reinforcing rods into "planks," as they have been called, of the length required for the particular span. There are several advantages claimed for this floor and roof slab system; the units can be made on a standard block machine and stockpiled, and the only requirements for assembling the "planks" is a smooth solid surface, preferably a concrete slab, and a few minor tools. The addition of a new mold and core makes any standard block machine available for production of this unit. The blocks can be assembled into "planks" anywhere, and a couple of lengths of steel pipe, a threaded rod, wrenches, etc., are all that are needed for the assembly.



Details of special block design for manufacture of concrete "plank"

One of the illustrations shows details of the 4-in. block, the others being similar except for depth. The end faces of the units are grouted by pressing the faces into a rich cement mortar, 1:3 mix, and they are then laid face to face, bottom side up to the proper length on the concrete assembly slab. Two lengths of steel pipe which just fit are laid into the reinforcing rod grooves, and the units are easily lined up. A rod fitted with a stop at one end and a threaded take-up device on the other is placed in the central core of the assembled

Left: Dipping abutting ends of concrete block in grout. Right: Showing how blocks are drawn up tight

Left: Placing blocks end-to-end after dipping in grout. Right: Lining up block with lengths of pipe laid in recesses for reinforcing

units and tightened until the units fit snugly together with full bearing. The lengths of pipe in the reinforcing rod grooves keep the units in perfect alignment.

Reinforcing rods are then placed in the grooves and the grooves filled with a rich portland cement-sand grout. During the grouting, the rods are twisted and moved in the grooves and tests have demonstrated that a satisfactory bond can be secured by this method of grouting. An excess of grout is rounded off over the rods to take care of shrinkage. After the grout has received its initial set, the excess is scraped off with a shovel. After adequate curing, the "planks" are ready to be shipped to the job. The tongue-and-groove design of the ends of the assembled units insures a good side fit in the next concrete "plank" and serves to hold the completed floor on a level.

Load Tests

Prof. O. N. Olson of the Marquette University Laboratory for Testing Materials made some interesting load tests of the precast concrete "planks" from which the following data has been taken:

Concrete "planks" used in the tests had a 1:3 mortar with an average strength of 1565 lb., and the units had a compressive strength of approximately 900 p.s.i. of gross area. This corresponds to approximately 1400 lbs. on the net areas.

The "planks" were tested for a clear span of 10 ft. The 4-in. units gave an equivalent uniform load of 133 lb. per sq. ft. when the deflection became 1/360 of the span. The ultimate loads came at an equivalent uniform load of approximately 330 lb. per sq. ft., the yield point and ultimate failure coming at the same load. The 6-in. units gave an equivalent uniform load of 215 lb. per sq. ft. when the deflection was 1/360 of the span. The ultimate load came at an equivalent uniform load of approximately 550 lb. per sq. ft., the yield point and the ultimate failure again coming at the same load. Actual uniform load tests were also made and agree very closely with the above results.

On the strength of these satisfactory tests, the Wisconsin Industrial Commission has approved the "planks" for roof construction. At the present time the possibilities of running the units through a pair of surface grinders and eliminating the necessity of the mortar between the units is being studied and also the possibilities of using prestressing.

Installation views show how the "planks" are installed at the job. It will be noticed that a space is left between the "planks" where they rest on the beams which is later filled with concrete. This construction detail allows for a variation in the length of the "planks" so that only standard units need generally be used to fit the length requirements. It also ties the ends of the "planks" together and thus tends to eliminate

Illustrating how concrete "plank" are installed. Note interlocking tongue-and-groove design

cracking in the finish placed over the "planks," caused by deflection or movement of the "planks."

Officers of the company are John Vander Heyden, president; Bernard Vander Heyden, vice-president; Arthur P. Vander Heyden, secretary-treasurer; Raymond Minette, manager, Kolr-Stone department; I. R. Moland, supervisor; and Louis Fallier, shop superintendent.

Buys Into Pipe Firm

MERRILL WASHBURN has purchased the interests of Abe Upp in the Woodlake Concrete Products Co. This concern, which started in 1938, has shown rapid growth and is now one of the leading concrete pipe manufacturers in this area.

Illegal Wage Increase

KOSMOS PORTLAND CEMENT CO., Louisville, Ky., was one of seven companies in the War Labor Board's Cleveland region charged with violating the anti-inflation act by granting pay raises without W.L.B. approval. Lewis M. Gill, chairman of the Cleveland Board, is reported to have said that only half of $2730 would be held as illegal wage increases by W.L.B. in determining the company's costs and expenses. It was charged that between November 1, 1942, and August 15, 1943, Kosmos paid salaries illegally increased $10 and $20 a month to six employes.

Rock Crusher Firms Face Monopoly Charge

THE FEDERAL TRADE COMMISSION has announced issuance of a complaint against the Rock Crusher Manufacturers Association, Cedar Rapids, Ia.; the Associated Equipment Distributors, Washington, D. C., and members of the two associations alleging a combination and conspiracy to suppress competition and create a monopolistic control over price in the interstate sale of rock crushing and other heavy construction machinery. The commission said its complaint alleges that as a result of an agreement and understanding entered into in 1935 and maintained since by the manufacturers and distributors named, acting in co-operation with each other and through their association, that federal, state, county and city government and other purchasers have been compelled to pay increased prices for rock crushers and other heavy machinery used in their defense, war and regular needs.

Sand-Lime Brick Production and Shipments

FOUR active sand-lime block and brick plants reported for October and four for September, statistics for which were published in November, 1943.

AVERAGE PRICE FOR OCTOBER

	Plant Price	Delivered Price
Detroit, Mich.	....	$16.00
Saginaw, Mich.	$13.00	....
Grand Rapids, Mich.	....	15.00
Seattle, Wash.	16.50	18.50

STATISTICS FOR SEPTEMBER AND OCTOBER

	*September	†October
Production	1,229,025	965,980
Shipments (rail)	716,000	36,000
Shipments (truck)	434,025	1,309,980
Stocks on hand	83,000	87,000
Unfilled orders	860,000	950,000

*Four plants reporting: incomplete, one not reporting stocks on hand and two not reporting unfilled orders.

†Four plants reporting: incomplete, one not reporting production, one not reporting stocks on hand and two not reporting unfilled orders.

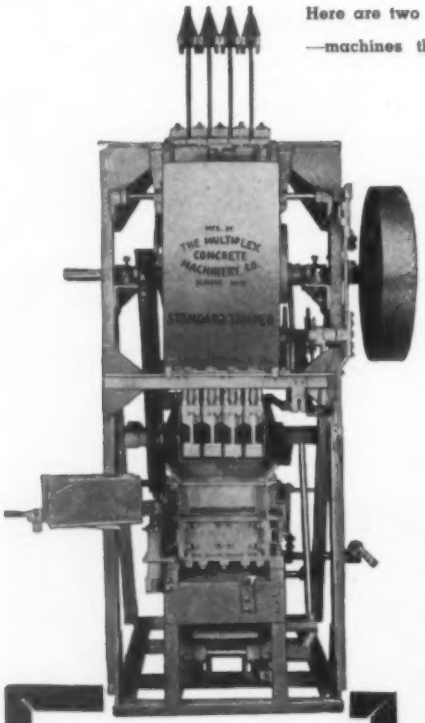
Circulate Your Copy of ROCK PRODUCTS

● If you do not file your copies of ROCK PRODUCTS, pass this copy along to some other person so that the ideas it contains may circulate as widely as possible. By doing this you will help us to save paper and comply with Government requirements.

MORE PRODUCTION
MORE PROFITS
MORE SATISFACTION

With MULTIPLEX Concrete Machinery

Here are two star performers in the Multiplex line —machines that mean better business for you.



MULTIPLEX STANDARD TAMPER

The MULTIPLEX 8-bar Standard Tamper produces from three to four 8 x 8 x 16 in. units a minute. Time-feeding while tamping and hopper agitation make better units. Makes plain and stripper, or face blocks, on one base. Strike-off hopper assures a smooth top.

The Multiplex line includes Power Tampers, Power Presses, Hand Machines, Super Tampers, Mixers, Block Cars and Racks.

Complete plant installations—parts —repairs.

Write for the MULTIPLEX Catalog

MODEL E FLUE BLOCK MACHINE—Makes 16 x 16 inch blocks. Includes all necessary attachments for ventilator and stone pipe openings.

MULTIPLEX CONCRETE MACHINERY
ELMORE, OHIO

Step Up Production in Making Silo Staves

Smith Silo Co. develops its own equipment for the manufacture of concrete silo staves. Calcium chloride used for curing

Close-up of mixing and special vibrating tables for manufacture of concrete silo staves

TO STEP UP PRODUCTION and make a better type of concrete silo stave, Warren Smith, president of the Smith Silo Co., Oxford, Mich., designed and patented vibrator equipment to eliminate the old hand-tamping method which was slow and did not assure a uniformly good product. The illustrations show the two vibrating tables, method of feed from the mixer, and the type of forms used.

It will be noted that an interesting method of stacking "green" silo staves is employed. Wooden channels at each end support each unit to a height of five units. This also facilitates their handling with a lift truck.

The Jaeger mixer and two vibrating tables are driven from the same power source by means of belts and pulleys. Above the mixer drum and supported from a steel frame attached to the mixer drum A-frames is a

(Continued on page 82)

Interior view of plant showing method of piling finished silo staves in forms

SPECIALTIES

Manufacturing "Glastone"

American Concrete Corporation manufactured the glass-faced concrete wainscoting for Chicago subway

All of the special glass-faced decorative wainscoting used in stations of Chicago's new State street subway and the two finished stations of the Dearborn street subway, described in the November issue of ROCK PRODUCTS, were manufactured by the American Concrete Corporation, Chicago. Operating under license arrangements with the Libbey-Owens-Ford Glass Company of Toledo, the American Concrete Corporation applied a lightweight concrete backing to approximately 20,000 sq. ft. of Vitrolite glass.

Various shaped, glass-faced concrete units stacked ready for shipment

The Vitrolite glass was furnished cut to the correct size and with beveled edges. Approximately 60 percent of the units were flat glass panels and 40 percent of the units were bent to various radii. All of the glass panels had a fine ribbing on the back to increase bonding to the concrete backup. The panels varied in size but the average area was 4 sq. ft. with 18- x 32-in. dimensions.

Three different thicknesses of concrete backing were applied to the units. Facing units for the structural walls were 1½ in. thick and units which were erected as non-bearing partitions were 4½ in. and 6½ in. thick.

The application of the backing to the glass panels of lightweight concrete developed by the American Concrete Corporation was as follows:

Manufacturing Method

Owing to the wide variety of sizes and shapes required, wood forms were used exclusively. These were made up as the job proceeded on fairly large casting tables as shown in one of the illustrations. Where possible the production was scheduled to allow the manufacture of a particular shape at one time to avoid rebuilding the forms at a later date. The structural glass was used as the bottom form and bedded in the wood forms on felt strips to cushion the glass from shock during the placing of the concrete.

A ⅛-in. thick coat of an approved mastic was then spread over the entire ribbed surface. In addition to this bonding material, a mechanical bond between the glass and the backup was provided, consisting of specially shaped zinc strips. The strip was formed to fit over the edge of the beveled glass and extend at an angle back into the concrete. The strip in final form had a concrete bond on each side.

Specifications for the 1½-in. facing units required 2500 p.s.i. lightweight concrete. The concrete for these units comprised standard Waylite fine and coarse with a mix of 1 part portland cement to 4½ parts of the combined Waylite aggregate. Sufficient water was added to provide a mix with the desired workability. The specification for the concrete used in the 4½- and 6½-in. nonbearing partition units required a compressive strength of 800 p.s.i. for the lightweight concrete. The mix

Vibrating concrete into forms with air tampers equipped with specially-shaped shoes

used for these units consisted of a special grading of Waylite aggregate mixed in the proportion of 1 part of cement to 6 parts of aggregate.

Both mixtures were placed in the forms by means of portable air tampers with specially shaped steel shoes. After removal from the forms the units were moist cured for five days and then stored under cover until delivery by truck to the various subway stations. The 1½-in. facing units were also treated with a mastic waterproof coating on the concrete surface to prevent sweating as they were being placed directly against the structural walls of the subway stations.

All of the concrete mixes used were subject to the approval of the Chicago Subway engineers who made test cylinders at regular intervals.

All of the Glastone units were installed by the Barrett Construction Co. in the 15 completed stations. The general contractors for the subway stations were W. E. O'Neil Construction Co. for State street and C. E. Carson Co. for the Dearborn street stations.

Maximum Prices of Concrete Blocks

O.P.A. REGION III ORDER G-1 UNDER M.R.P. 188:

(a) Any manufacturer within the area composed of Wayne County, Michigan, and those portions of Oakland and Macomb Counties, Michigan, lying south of the Fifteen Mile Road, so called, may charge and receive not to exceed the maximum prices established by this order for the listed concrete blocks, when the sale and delivery pursuant thereto occurs within the limits of the said area composed of Wayne County, Michigan, and those portions of Oakland and Macomb Counties, Michigan, lying south of the Fifteen Mile Road, so called.

Commodity concrete blocks:	Adjusted maximum prices
8x8x16 plain blocks	$0.13
8x8x8 plain halves	.12
8x8x16 plain corners	.17
8x8x8 plain ½ corners	.13
8x8x16 plain pilasters	.19
8x8x16 plain slotted	.19
8x8x8 plain slotted ½'s	.15
8x8x16 solid	.24
8x8x8 half solid	.15
12x8x16 plain blocks	.17½
12x8x16 grade blocks	.20
12x8x8 plain halves	.15
12x8x12 plain pier blocks	.19
12x8x16 plain corners	.22
12x8x8 plain ½ corners	.17
12x8x16 plain pilasters	.24
12x8x16 plain slotted	.24
12x8x8 plain slotted ½'s	.20
4x8x12 plain solid slabs	.13
4x8x16 plain solid slabs	.13
4x8x16 hollow slabs	.12
8x8x18 plain blocks	.14
8x8x18 plain corners	.17½
8x8x9 plain ½ corners	.13
8x8x18 plain pilasters	.20
12x8x18 plain blocks	.18½
12x8x18 grade blocks	.21
3x8x12 plain solid slabs	.11
4x8x18 plain solid slabs	.14

(b) Notwithstanding the provisions of section (a) above, any manufacturer of concrete blocks within said designated area whose present legally established maximum price or prices for such concrete blocks is in excess of the maximum price or prices established by this order may continue to charge and receive not to exceed such higher legally established maximum price or prices.

Best Guarantee of Good Maintenance

FAITHFUL, HARDWORKING, conscientious employes are the best guarantee that any operators' plant and equipment will be adequately maintained. Sometimes that fact is overlooked. A good example of a company which does *not* overlook this fact is the Consolidated Rock Products Co., Los Angeles, Calif.

From its illustrated monthly house organ (for employes) of recent date the following data are taken:

"The company has just awarded some very attractive service pins to the employes.

"The Production Department with 271 men employed have:

4 Men who received 30 year pins (diamond)
4 Men who received 25 year pins (emerald)
26 Men who received 20 year pins (ruby)
31 Men who received 15 year pins
16 Men who received 10 year pins
35 Men who received 5 year pins

"Three of the 30 year pins were presented to three men at the Largo Plant, Ben Fraser, shovel runner, Joe Gonzales, car man at the incline hoist, and E. Medina, hoist man. These pins were presented by the company's president, Robt. Mitchell. The fourth diamond pin was presented to Jake Fredericks of the Alameda Plant, by the vice-president, Frank Gautier, who also wears a 30 year pin. The success of the company's operations during the past trying years has been due largely to the capable and faithful employees we have at the various plants.

"The company now has in operation:

7 Producing plants situated in Los Angeles, San Bernardino and Orange Counties.
2 Repair shops are needed to maintain these plants for continuous operation.
10 Shovels are used for excavating materials at the various pits.
3 Shovels are used in various stock piles.
16 Clam shells are used in the stock piles for reclaiming the various sizes of materials demanded by the trade.
2 Draglines are used for breaking the 100-ft. banks at the Irwindale and Roscoe pits.

"In transporting and conveying the materials from the pits and through the various processes in the mills, are used:

27,375 ft. of conveyor belt.
26 crushers are in daily use making crushed rock of the various sizes of which Crushed Rock No. 4 requires a lot of crushing and screening in order to supply demands.
29 Bunkers are in use for the storage of materials at the various plants.
267 Electric motors are in daily use having 8097 total horse power of connected load of these 267 motors.
7,138,480 kilowatt hours of electricity were used in the year 1942 for power by the seven plants to produce the crushed rock, sand and gravel sold during the year.
$76,323.82 was the cost of this electricity used during the year 1942 by the seven operating plants.

"The various pits have wide characteristics. The Alameda pit has a high percentage of fine sand while the Largo pit has a high percentage of rock. The other pits vary in their rock and sand percentages between the two limits of the Alameda pit and the Largo pit. All of the plants have their own producing wells for water for the purpose of washing the sand and gravel. The Alameda, Irwindale and Roscoe Plants transport all of their material from the shovel in the pit to the mill by conveyor belt. The Largo, Claremont and Orange County Plants receive their material from the pit by the use of railroad cars and locomotives. The Sierra Plant has its material hauled from the pit by means of gasoline engine driven trucks."

Build Cement Plant

MCDONALD ENGINEERING CO., Chicago, Ill., is building a cement plant for Cementos Del Pacificos at Mazatlan, Mexico. This plant is being built with used equipment.

"ANCHOR"
Complete
EQUIPMENT AND ENGINEERING SERVICE

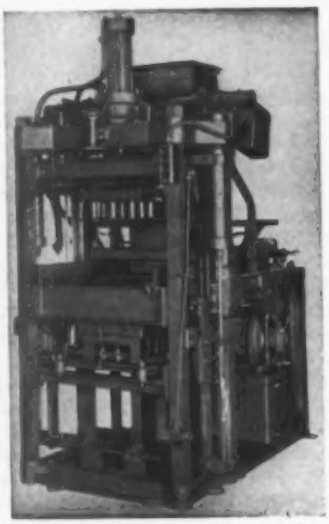
Equipment for all phases of manufacturing concrete cinder block and other lightweight aggregate units. Our engineering service for new plants and modernizing old ones will help you operate more economically.

Hobbs block machines, Anchor tampers, Anchor Jr. strippers, Stearns power strippers, Stearns Joltcrete, Stearns mixers, pallets, Straublox Oscillating attachments, etc.

Repair parts for Anchor, Ideal, Universal, Stearns, Blystone mixers and others.

Anchor Concrete Mchy. Co.
1191 Fairview Ave., Columbus 8, Ohio

HYDRAULIC VIBRA-PRESS



A High Production Machine Making Blocks which are
Demanded by the Contractor
Endorsed by the Architect
Desired by the Mason

The KENT MACHINE CO.
CUYAHOGA FALLS, OHIO

Silo Staves

(Continued from page 79)

drum containing the proper quantity of water per batch. Aggregates are received by chute from hoppers.

For a curing agent, Dowflake calcium chloride is used. One of the economics claimed for this admixture in concrete products is a saving in forms. By using admixtures of calcium chloride, two percent by weight of the cement in winter and one-half of one percent in summer, two runs per day are made in winter instead of one, and in the summer three runs are made instead of two.

Canada Cement Declines

WITH the war construction program in Canada nearing completion, cement production in the Dominion is expected to fall off. August, 1943, output at 952,500 bbl. was about 22 percent less than the 1,230,065 bbl. reported for August, 1942. For the eight-month period production was 4,888,326 bbl., a decline of 17 percent from the similar period in 1942.

Find Foundry Sand in K. C.

FOUNDRY SAND is being excavated from the side of a hill on Twelfth street in Kansas City, Mo. This project is owned and operated by Ab Rees, Ralph Rees, and M. S. Glynn.

Concrete Block Addition

UNION WIRE ROPE CORPORATION, Kansas City, Mo., is erecting a one-story addition to its plant covering an area of 60- x 170-ft., which will have steel columns and trusses with concrete block walls and a concrete slab roof.

New Gypsum Trade Mark

THE CELOTEX CORPORATION, Chicago, has announced that hereafter all Celotex gypsum building products will be distributed and sold under the new trade mark of "Celo-Rock," according to an announcement by Henry W. Collins, vice-president in charge of merchandising. Products to be sold under the new name are anchor plaster, lath, liner board, sheathing, backer board, white rock wallboard, exterior wall units, interior wall units, roof deck slabs, and gypsum accessories.

To Build Pipe Plant

THE WISCONSIN CONCRETE PIPE & CULVERT CO., Sheyboygan, Wis., will erect a pipe manufacturing plant in Green Bay, Wis., in the near future, according to an announcement by Emmet P. Evans, vice-president. Mr. Evans is in charge of sales for the company.

Add Curing Kilns

GRAYSTONE CONCRETE PRODUCTS CO., Seattle, Wash., will construct new concrete products curing facilities to meet the increased production of the company. The curing rooms will occupy a building 38- x 40-ft. in area.

Bonneville Stone Bidders

STAR SAND CO., Portland, Ore., was low bidder at $4845 to supply crushed quarry rock to the Bonneville power administration at Ampere, Wash. Ross Island Sand & Gravel Co., Portland, bid $5225 and H. G. Johnson, Portland, bid $10,165. Commercial Sand & Gravel Co., Salem, Ore., was the lone bidder to supply Bonneville with revetment stone.

Ease WPB Insulation Rule

PURCHASE of house insulating materials without WPB sanction is permitted as a result of relaxation of WPB regulations, according to recent announcement. The new order was issued to promote fuel savings.

Concrete for Prison Camp

READY MIXED CONCRETE CO., Denver, Colo., has the contract to supply ready mixed concrete for the prisoner of war camps in Colorado. A batching plant has been set up near Greeley, Colo., for this big job.

For Fast, Accurate, Continuous—
WEIGHING
FEEDING
PROPORTIONING
Raw Mix—Finish Grind
Use FEEDOWEIGHT

MERRICK SCALE MFG. CO. 188 AUTUMN STREET PASSAIC, NEW JERSEY

INFORMATION

TO HELP YOU MEET TODAY'S PROBLEMS AND TO MAKE PLANS FOR TOMORROW

You can obtain catalogs listed on these pages by merely checking and mailing the coupon below.

1 ARIDIFIERS.—Logan Engineering Co. has released a new 8-page bulletin, No. 543, which describes and illustrates how the aridifier cleans and dries compressed air by centrifugal force.

2 BOILERS.—The Babcock & Wilcox Co. has published a 40-page booklet describing and illustrating single-pass, three-pass, three-drum, divided-furnace and two-drum marine boilers. The new stud-tube economizer is also illustrated and described, as well as oil burners, superhead control, and water-cooled furnace construction. Engineering data of interest to naval architects, chief engineers, marine superintendents and port engineers is also included.

3 COMPRESSORS.—Clark Bros. Co., Inc., has published an 8-page booklet, Form No. M35-742, giving hints on the care and maintenance of gas engine driven compressors.

4 COMPRESSORS. — Davey Compressor Co. has issued a reprint of its catalog describing and illustrating every type of air compressor. Additional details on application of the split propeller power take-off, together with a photographic breakdown of the unit are shown. One section on industrial units has been entirely revised to include the 60 cu. ft. unit. A new section on the pneumatic saw has been included.

5 CONTROLS.—General Electric Co. has issued a 16-page manual (GEA-4015) entitled "Simplified Guide to the Selection and Application of Commonly Used Motor Controls." The fundamentals of control are presented in an interesting and understandable manner with many illustrations and explanatory diagrams. It also lists standard controls and describes operation, discusses when to use magnetic and manual control, and explains when reduced-voltage starting is necessary, etc.

6 CONVEYORS. — Continental Gin Co. has issued a new bulletin, ID-105, which gives complete engineering data for calculating belt conveyors. The bulletin also includes price and dimensional data on idlers, trippers and take-ups.

7 CONTROLS. — Photoswitch, Inc., has issued a new 4-page bulletin describing and illustrating electronic level controls for all conductive, non-conductive, corrosive, and combustible liquids and powders. Typical applications are graphically shown.

8 DIESELS.—Caterpillar Tractor Co. new eight-page color booklet, Form 7707, entitled "Caterpillar Carries On," tells what they are doing to "keep 'em working" and to prevent the "orphaning" of tractors in spite of wartime pressure.

9 DIESELS.—Fairbanks, Morse & Co. new bulletin No. 3000A contains a brief history of the company's background, together with particulars on design, manufacture and service facilities applicable to its entire commercial line of marine and stationary Diesels. An attached loose leaf supplement sheet gives detailed operating cost data for typical municipal plants.

10 PIPING.—The Flori Pipe Co. has issued a new 64-page book on fabricated piping. It covers the various ways in which piping can be used and lists present market prices for every kind and size of fabricating piping. The book contains many large, clear illustrations of pipe installations.

11 INSPECTION CAR.—The Buda Co. has released a new bulletin, No. 1145, describing and illustrating the new F-2 Model B two to four man inspection car known as the "Roadmaster."

12 LACING.—The Bristol Co. has released a 4-page folder, Bulletin No. 773, giving prices, sizes and descriptive information on steel belt lacing.

13 MOTORS.—Fairbanks, Morse & Co. new Bulletin 1160 describes and illustrates a new type polyphase squirrel-cage induction motor that is protected against flying chips, falling particles and dripping liquids. The frame is cast in one piece with rib sections to give added strength without increase in weight. Dimensions and frame sizes are included in the bulletin, also motor characteristics.

14 RUBBER LININGS.—The B. F. Goodrich Co. has released a new catalog section on Vulcalock rubber linings for handling corrosives and abrasives.

15 SCREWS.—The Bristol Co., Mill Supply Division, has issued two new bulletin price lists of multiple spline and hex socket screws. Bulletin No. 849 gives prices on the multiple-spline type and Bulletin No. 850 gives prices on the hex type. New listings of regular stocked items are given along with standard sizes available on order.

16 SHOVELS.—Buckeye Traction Ditcher Co. new 24-page bulletin No. 543 describes and illustrates convertible shovels, cranes, trench hoes, draglines and piledrivers. The many advantages of "Mevac" vacuum power control are explained and exclusive features resulting from the use of vacuum power control, such as automatic swing brake and vacuum power dipper trip, are described in detail.

17 STEEL.—The Eimco Corp. has released a 4-page folder announcing its new ultra-tough alloy steel "Utaloy" that can be furnished in castings of any weight up to 10,000 lbs. and withstands impact, shock and abrasion.

18 V-BELTS.—Manheim Mfg. & Belting Co. has published a complete catalog and instruction manual on Veelos adjustable V-belts. Complete engineering data and length table are also given. The catalog shows in detail the sequence of operations to uncouple the belt at any point with an ordinary screw driver and the necessary steps to couple the belt together again without the use of any tools. It also gives directions for installing the belt on the drive.

19 VIBRATORS.—Syntron Co. has released a new 64-page catalog No. 435, which represents the latest information on electric vibrators for bins, hoppers and chutes, "Vibra-Flow" vibrating feeders, dry chemical feeder machines, "Weigh-Flow" gravimetric feeder machines, vibratory paper joggers, hydraulic vibrators, concrete vibrators, electric hammers and self-contained portable gasoline hammer concrete breakers and rock drills. The book also shows installations and applications of the various types of this equipment.

20 WELDERS.—General Electric Co. new 12-page bulletin (GEA-1440J) describes and illustrates type WD direct-current, single-operator arc welders. The bulletin shows the ease with which they can be started, their smooth, steady performance, broad current range, high rate of production, and low operating and maintenance costs.

Cut Out and Mail This Coupon to

ROCK PRODUCTS, 309 W. Jackson Blvd., Chicago, Ill.

I would like to have the items circled. (12-43)

1	2	3	4	5
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Company .....

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Mineral Processing

Members of American Institute of Mining and Metallurgical Engineers discuss technical problems and economics

ALTHOUGH not as many as usual attended the fall meeting of the Industrial Minerals Division of the A.I.M.M.E., those present in Wilmington, Del., October 21 and 22 spent their time in very interesting and instructive discussions. Some of the high points of the editor's own impressions were given in our editorial in the November issue of ROCK PRODUCTS.

Roofing Granules

A paper on "Roofing Granules," by GEORGE W. JOSEPHSON, U. S. Bureau of Mines, is a welcome addition to the rather scanty literature on this subject, although much of the recent development methods in synthetically colored granules is still a trade secret. Mr. Josephson traced the history of granule covered asphalt roofing. He said the object of the granule coating is to completely cover the asphalt, and for this reason various percentages of fines are included. Complete covering is essential, both for fire resistance and to prevent deterioration of the asphaltic base by sunshine.

The use of highly colored granules, Mr. Josephson said, is a comparatively recent development. A variety of minerals have been used for their natural colors. The use of painted granules has practically disappeared, but since about 1925 artificially colored granules with baked-on glazes are much in demand, he said.

The necessary qualities of a roofing granule, according to Mr. Josephson, are the subject of various and touchy opinions—such qualities as porosity, adhesion to asphalt, relative insolubility, grain shape, etc., are all important considerations. There is a very definite trend toward the brighter colors. There have been constant changes in specifications and much research work is in progress.

Grain sizes, according to Mr. Josephson, run usually from 10- to 35-mesh; sometimes from 28- to 100-mesh. There should be sufficient range that all the space between the larger grains is filled with the smaller grains. Prices for granules, natural colors, range from about $10 to $12 per ton and for the highly colored granules about $14 per ton.

There are some large plants and considerable investments in the granule industry. Altogether there are about 40-odd producers and keen competition, since customer satisfaction is the controlling factor. The industry is fairly well concentrated in the Northeastern and North Central parts of the country. The plants range in size from 10,000 to 150,000 tons of annual capacity. Large plants have economy of operation but the smaller plants may have lower freight rates to the largest markets.

Both asphalt and colors are allocated at present by the War Production Board.

Mr. Josephson estimated the present normal annual production of roofing granules as follows:

538,000 tons of artificially coated or colored granules.

352,000 tons of natural rock granules.

43,000 tons of granules made from crushed brick.

"..DOING GOOD WORK-

so we continued to buy PLYMOUTH!"

Look at the remainder of the direct quotation from the National Mortar & Supply Company, Gibsonburg, Ohio, manufacturers of lime and limestone products:

". . . we only had one other locomotive at our works . . . we replaced it with a Plymouth, and since then have added a number of Plymouth Locomotives. They are used in switching regular freight cars on our loading tracks; in hauling stone from the shovel to the crusher; and in hauling stripping from top of rock deposit to dump. Cost figures will compare well with other makes of locomotives. Plymouths are doing good work for us."

Plymouth Locomotives—gasoline or diesel powered—offer you the same fine performance, Plymouth power, speed and versatility assure dependable, low-cost industrial transportation. Available in accordance with government planning.

TRACK HAULAGE IS CHEAPER HAULAGE

PLYMOUTH GASOLINE and DIESEL LOCOMOTIVES

PLYMOUTH LOCOMOTIVE WORKS

Division of The Fate-Root-Heath Co. PLYMOUTH, OHIO, U. S. A.

DR. POOLE MAYNARD, consulting engineer, Atlanta, Ga., raised the point that many small mineral processors did not have a sufficiently diversified line and wondered if there would be a market for colored chicken grits. No one had the answer.

Other discussion brought out the information that calcareous (limestone) granules in general were too soft to be handled in bulk, as granules have to be handled. The most popular color in granules is green (60 to 70 percent of production), the next is blue black or red, the next bright blues. Asked about "blistering," caused by lack of adhesion of the granule to the asphalt, Mr. Josephson said that the blame was usually attributed to the asphalt; that there was much difference in asphalts in this respect. The problem, as pointed out by IRVING WARNER, vice-president, Warner Co., Philadelphia, Penn., is probably similar to the stripping of aggregates in asphalt pavements. Mr. Josephson said the trouble could be cured by using dipolar resins on the glassy-surfaced granules and limestone filler in the asphalt.

Processing Aggregates

The mineral aggregates committee of the Industrial Minerals Division was asked for a paper to pose the production problems of the mineral aggregates industries in such a way as to interest professional mining engineers in helping to solve these problems. The editor of ROCK PRODUCTS, NATHAN C. ROCKWOOD, was chosen for this job.

He defined mineral aggregates as "fragments of any rock or mineral used to supply bulk or volume or substance for a given purpose."

Mr. Rockwood suggested that a professional mining engineer could well serve the producer by expert advice on the exploration and commercial possibilities of a deposit, which it is proposed to use, or is being used for mineral aggregates—not only on technical matters involving geology and engineering, but economic matters involving markets to be served, etc. He said that cost of operation, particularly of some quarries, depended a great deal on how they were opened and developed. In the case of supplying special aggregates for particular purposes, the advice of a geologist on selective quarrying would be particularly helpful.

In plant processing, Mr. Rockwood mentioned as an example, the screening operation. Hardly any operator could meet specification limits for sizes if these limits, or tolerances, were literally enforced. The consulting engineer thoroughly familiar with the limits of practicable commercial screening could be very helpful as an umpire or referee in cases of dispute between producer and customer.

Wet processing of sand and gravel or crushed stone, according to Mr. Rockwood, has problems similar if not identical with some of those in the ore-dressing field of the mining and metallurgical engineer. He mentioned the possibilities of extending froth flotation in treating these common minerals.

In the new field of investigation as to what causes some mineral aggregates to react chemically with cement, in hardened concrete, to the detriment of the concrete, Mr. Rockwood suggested that possibly the geochemist could find the answer and the cure.

IRVING WARNER discussed the paper at some length with particular emphasis on the fact that with the very low profit margin and no premium for material that really did meet specifications, the problem of the producer is largely one of economics. He said he was even then trying to determine the economic feasibility of

SAND WASHING
TO EXACTING SPECIFICATIONS

Get Big Tonnage at Low Power Cost

with AKINS CLASSIFIERS

For many years AKINS Classifiers have been identified with the dressing of practically all metallic ores and have found many applications in other industries. More recently AKINS Classifiers have been successfully adapted to washing sands —particularly sands specified to close separation, as for glass making. . . . These machines do not require unloading to start after shutdown—a big advantage for plants not operating 24 hours a day. . . . In writing for Bulletin 24-HA, please state your washing problem.

A 54" High Weir Type AKINS Classifier specially equipped with wash boxes and lifter blades for washing sand.

Lowden Dryers; Skinner Multiple Hearth Roasters; Ball, Rod & Tube Mills; Smelting Equipment; Crushers and Rolls.

COLORADO IRON WORKS CO.

Main Office, DENVER (2), COLORADO, U. S. A.

Canadian Locomotive Co., Ltd., Kingston, Ont., Can. Clyde Engineering Co., Ltd., Granville, N.S.W.
Head, Wrightson & Co., (So. Africa) Ltd., Johannesburg.
Vancouver Iron Works, Ltd., Vancouver, B.C., Can. Head, Wrightson & Co., Stockton on Tees, Eng.

Mineral Processing

(Continued from page 85)

installing a large thickener (a well-known mining device) for the recovery of fine sand.

Mining Clay Underground

RICHARD M. FOOSE, Pennsylvania Geological Survey, described the very interesting underground mining operation of the Pennsylvania Clay Co., about 20 miles west of Harrisburg for a white clay used chiefly for white cement manufacture by the Medusa Portland Cement Co. The clay is 66-67 percent silica and about 22 percent alumina. It is recovered 300 to 600 ft. underground by hand mining methods.

The processing includes screening through 60-mesh, hot-air drying at 250 deg. F., bagging and shipping. In addition to its use for white cement manufacture, this white clay is also sold for paint pigment, rubber filler and filler for various other products.

Future of Lithium

"Lithium, Its Chemistry, Metallurgy and Applications," was the title of an exceedingly interesting talk by DR. H. OSBORG, vice-president and general manager, Lithaloys Corp., New York City. Lithium today is about where magnesium was 10 or 12 years ago. Lithium silicates and phosphates are common minor constituents of many rocks. These can be floated, leached and concentrated and the lithium converted to a carbonate. The metal itself, lithium, is only one-third the weight of magnesium and is the lightest of all metals. Its outstanding characteristic as an element is its very small atomic volume.

As an alloy it has some remarkable properties; with mercury and with bismuth, for example, it greatly raises the melting points. As a chloride, lithium is extensively used in industry in air-conditioning and refrigeration. What was once a drug-store commodity apparently has a great future in industry if its cost of recovery can be made sufficiently low.

Future of Fluorspar

J. L. GILLSON, geologist, E. I. du Pont de Nemours & Co., gave some interesting facts about the post-war prospects of the fluorspar industry, which in 1943 will amount to about 500,000 tons, with prices rising. In the post-war period he expected to see imports resumed with a considerable drop in prices. The domestic demand would probably drop to about 250,000 tons per year, with domestic production down to less than 200,000 tons, which would require processing about 500,000 tons of crude ore.

Mr. Gillson spoke with special reference to deposits of fluorspar in the Western States. He emphasized the effect of taxation on the development of these deposits. He said the advantages are all on the side of the large operator who can pay for development costs out of current expenses. In the Western States the deposits of 89 percent grade ore are fairly numerous, but operations are small.

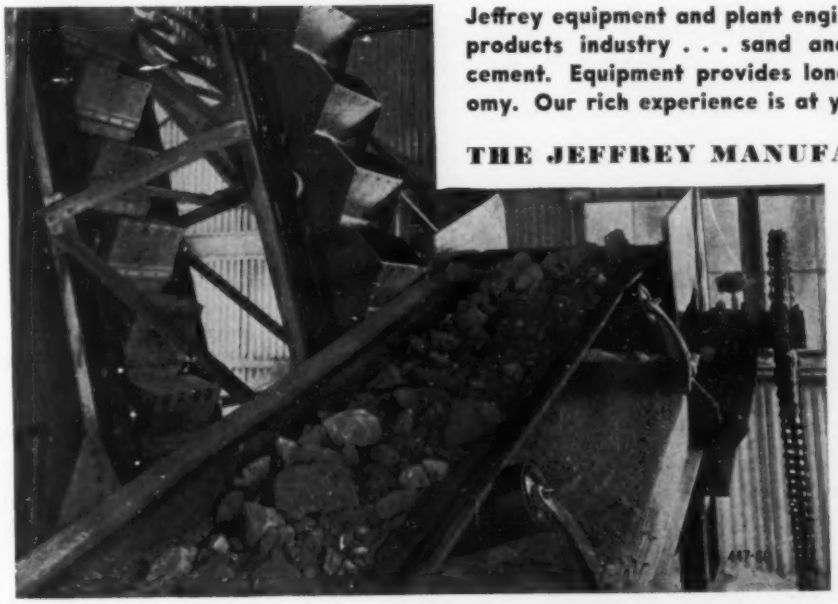
Dominica Cuts Cement

IMPORTATION of cement into the Dominican Republic has been prohibited except under prior import license issued by the Committee of Control of Prices of Construction Materials, in accordance with a recent government decree. The purpose of the decree, according to Department of Commerce reports, is to regulate the volume of imports of cement, a commodity not subject to import recommendation certificates, so that shipping space for this commodity may not be used to the exclusion of more essential materials.

Efficient
THE YEAR ROUND
When you choose a PLAT-O Vibrating Screen to handle your grading operations, you are selecting a screen that will assure efficient, reliable performance 12 months . . . 52 weeks out of the year.
The PLAT-O Screen is lubricated by oil. There's no grease to gum up the works in cold weather. Even in zero temperatures, PLAT-O starts easily by merely pushing the button. Valuable production time is not lost in applying the blow torch.
PLAT-O's oil bath lubrication increases operating efficiency in other ways, too. It provides better protection for bearings and other moving surfaces and it permits operation at higher speeds with less heat. Important also, even the largest PLAT-O bearing can be amply lubricated with less than a half-pint of SAE No. 20 automotive oil.
Here is only one of eight features of design and construction which PLAT-O offers to increase your production and profits . . . to assure dependable performance. It will pay you to examine all of these features closely and you can do that very easily . . . just write for your copy of "Better Sizing—Cheaper."
DEISTER MACHINE COMPANY
Fort Wayne 4, Indiana
PLAT-O
by DEISTER

Jeffrey

CHAINS	FEEDERS	PULVERIZERS	SHREDDERS
CONVEYORS	GRINDERS	PULLEYS	SPROCKETS
CAR PULLERS	IDLERS (Belt)	MONO-VEYORS	TAKE-UPS
CRUSHERS	GEARS	SCREENS	WAYTROLS
ELEVATORS	PORTABLES	TRANSMISSION	MACHINERY



Jeffrey equipment and plant engineering cover the entire stone products industry . . . sand and gravel, crushed stone and cement. Equipment provides long service and maximum economy. Our rich experience is at your disposal.

THE JEFFREY MANUFACTURING COMPANY

Established in 1877

935-99 North Fourth Street
COLUMBUS 16, OHIO

Baltimore, Birmingham, Boston, Buffalo, Chicago, Cincinnati, Cleveland, Denver, Detroit, Harlan, Huntington, Houston, Milwaukee, Pittsburgh, Philadelphia, New York, Scranton, Salt Lake City, St. Louis

Jeffrey bucket elevator (heavy duty type) and belt conveyor are shown at left. They are handling crushed stone in a large quarry operation. Jeffrey units will speed up schedules—will soon pay for themselves.

Uniform Separation

The new model GAYCO Centrifugal air separator makes possible the uniform and increased recovery of cement, lime and any other finely ground metallic or non-metallic material within a range of 80 to 400 mesh.

- **Greater Capacity**
- **Cleaner Trailings**
- **99% Through 325 Mesh**
- **25% to 30% greater recovery of fines**
- **Not affected by variation in speed or rate of feed**

Manufacturers also of "Reliance" Crushers, Screen, Elevators, Conveyors, Bin Gates, Grizzlies. Complete crushing, screening and washing plants for crushed stone, sand and gravel.

Universal Road Machinery Co.

RUBERT M. GAY DIVISION 117 Liberty St. New York, N. Y.
Canadian Representative: F. H. Hopkins & Co., Ltd., Montreal
FACTORY & LABORATORY, KINGSTON, N. Y.

GRUENDLER CRAFTSMANSHIP

Employed by U. S. A. in the WAR EFFORT

For Access Road and Air Base Construction

PORTABLE CRUSHERS

Proper Size Aggregates---on the Job

Balanced, Non-Tipping. Expertly designed to meet your exact requirements in proper size aggregates—larger capacity and quick mobility to and from job.

Four Wheel Maintenance JAW CRUSHER with Power Unit

GRUENDLER ENGINEERS

On the job to help you in any way, NOW and for your Post War Plans. Blue Prints or Practical Suggestions sent. No obligation.

Write for Illustrated Catalog No. 601 and Bulletin on our Large Capacity Hammer Crushers.

GRUENDLER CRUSHER & PULVERIZER CO.
PLANT and MAIN OFFICE — 2915-17 N. MARKET • ST. LOUIS, MO.

W. P. B. Construction Policy

THROUGH THE COURTESY of V. P. Ahearn, executive secretary, National Sand and Gravel Association, we publish a report he has made to his member companies on the W.P.B. policy toward new construction, recently announced.

The War Production Board has issued what it calls a Statement of Policy, continuing the restriction of construction of new facilities and reducing facilities under construction to the minimum regarded as necessary to the war program and for essential civilian needs. Full text of the statement follows:

"It shall be the continued policy of the War Production Board to restrict construction of new facilities and to reduce facilities under construction to the minimum necessary for the war program and for essential civilian needs, in order to conserve to the utmost all resources for the production of war supplies and equipment. In accomplishing this result, the Board will in each case seek a minimum consumption of materials and manpower, together with maximum utilization of existing facilities and equipment. The Directive for Wartime Construction dated May 20, 1942, which established these principles is hereby affirmed."

Recently W.P.B.'s Director of the Office of Civilian Requirements, A. D. Whiteside, invited representatives of the construction industry selected by the U. S. Chamber of Commerce to confer with W.P.B. officials in the interest of planning an orderly resumption of civilian construction activities as developments in the war emergency permitted. Charles Warner, president of the Warner Co., Philadelphia, was a member of the committee and attended its preliminary meeting in Washington on September 14. The committee met with Mr. Whiteside and his associates on the following day, and in Mr. Warner's unavoidable absence, V. P. Ahearn acted as his substitute. A statement was submitted by management members of the committee, through its spokesman, Frank T. Sheets, president of the Portland Cement Association. That statement follows:

Statement by Management

We, representing a cross section of the construction industry, who have been invited by the W. P. B. to confer on problems related to the war and civilian requirements now facing our country, wish at the outset to make clear our position. We do not advocate, nor will we advocate any measures which we do not believe compatible with the war effort.

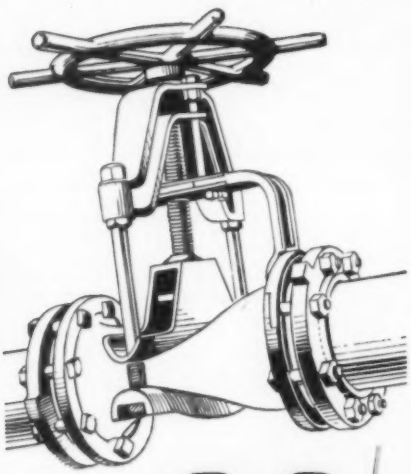
Successful prosecution of the war requires that all of our physical facilities, including industrial, commercial, housing, railway transportation, highways and streets, food production, water supply and sanitation, and other facilities essential to the public health, welfare and safety, be maintained in safe and efficient service. This is the minimum need, if maximum war production is to be maintained. Maintenance alone will not hold all of them at an efficient level indefinitely, and some reconstruction and replacement, some expansion and new construction are becoming increasingly necessary.

To attain these ends it seems highly desirable that the W. P. B. and those engaged in lines of endeavor essential to providing these facilities, make a realistic appraisal periodically to determine what portion of our manpower and materials can be allocated to maintaining and improving the facilities cited without interference with the production of material required for the support of our armed forces.

During the period of tuning up for war production, the construction industry satisfactorily fulfilled its obligation and

MASSCO-GRIGSBY

Pinch VALVES



NO METAL CONTACTS PULP OR LIQUID

Useful for solutions which are highly corrosive or which crystallize at normal temperatures and must be handled at up to 300 F; or for mixtures of solutions or solids which are both corrosive and abrasive.

Recommended for transfer lines, controlling flow in plant, delivering product to storage or cars or for handling fine dry materials. Valve shuts tight on solid particles.

These valves resist wear **more** than metallic parts of gate or plug valves. No packing glands. Freezing temperatures will not destroy sleeve. Easy to operate.

1", 2" and 3" for continuous pressures to 100 lbs.; 4", 6", 8", 10" and 12", up to 150 lbs. Send for illustrated folder.

MASSCO Jr. Rock Bit Grinder

Other Products — MARCY Ball, Rod and Tube Mills; Genuine WILFLEY Concentrating Tables; MASSCO-McCARTHY Hot Millers; Rock Bit Grinders; Belt Feeders; Density Controllers.

DENVER
SALT LAKE CITY
EL PASO
NEW YORK CITY

The Mine & Smelter Supply Co.

CANADIAN VICKERS, LTD. MONTREAL
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provided plants, housing, and military establishments with a rapidity and efficiency heretofore unexcelled in the world's history. The construction industry is now prepared and should be maintained in a position to perform the obligations which lie ahead.

Few of the nation's basic peacetime industries have experienced more drastic wartime restriction than that which has seemed necessary in the field of private building and construction. The annual volume of new construction for the civilian economy has been reduced from a 1941 level of about eight billion dollars to less than two and one-half billion dollars during the current year. There is a grave question as to whether the current level of civilian construction can be much further reduced without danger of curtailment to a point where indispensable civilian needs will be sacrificed. It may well be that difficulties exist with respect to carrying out essential maintenance and repair work which might be removed without detriment to the war program, and thus facilitate maintenance that cannot be further deferred if our civilian facilities are to be safely and efficiently operated.

If, as and when war conditions permit, opportunity should be afforded to resume gradually an accelerated rate of civilian construction so that we may regain as much as may be the loss which has been sustained due to the substandard maintenance of such facilities which has prevailed during the last two years and provide the replacements and new facilities, the need for which is becoming increasingly apparent.

Therefore, it seems highly desirable now that we start to plan this program of orderly reconversion from maximum war production on a step by step basis, to the end that, as war workers and service men are released they may be absorbed in our economy and their talents devoted to useful enterprise.

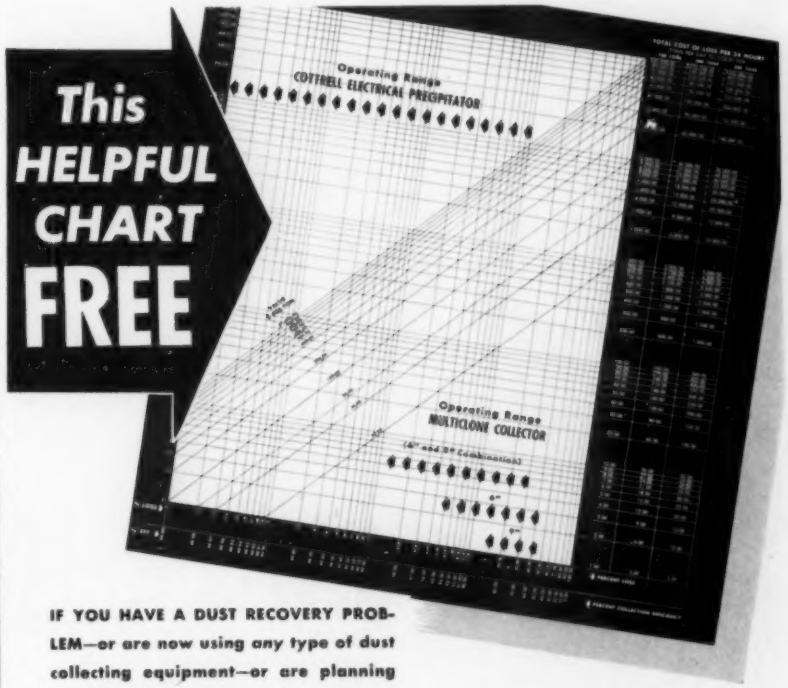
Only the war agencies, the W. P. B. and the W. M. C. have access to the confidential information and statistical facilities which are needed to tell us which materials and what segments of the nation's manpower will become available first. When those facts are known, the construction industry can then proceed intelligently with its preparation to meet the critical problems which must be faced from now until the end of the war and the even more critical problems which must be faced at the close of hostilities.

Labor Participation

Mr. Whiteside also invited the Building and Construction Trades Department of the American Federation of Labor to send representatives to the conference. These consisted of presidents and secretaries of the various international unions. They said that many members of their unions were out of employment because of restrictive W.P.B. construction policies, and they indicated doubt that the men, because of their ages and family responsibilities, would find it possible to leave their homes and work in war plants at distant points. Little hope was held out by W.P.B. representatives, however, that the slightest relaxation of construction policy can be expected. It was indicated that while the serious material shortages had been largely overcome, there continued to be a critical manpower situation which made it necessary for W.P.B., charged with the responsibility of production for war, to turn its face against any relaxation of policy which would divert manpower to anything which did not have a direct relationship to winning the war.

It was stated that the manpower problem was about to become considerably aggravated and that W.P.B. felt that its first responsibility was to compel the maximum utilization of limited manpower facilities in the production of implements of war. Furthermore, there was accumulating evidence of an impending transportation crisis, second in importance only to manpower difficulties. The combination of manpower and transportation difficulties undoubtedly explains the later restatement by W. P.B. of its opposition to any new construction which could be postponed until after the war is won.

It will be incumbent upon applicants for new construction to show W.P.B. that disapproval will retard the war program. No exception can be taken to the position of management that it will not advocate any construction which is not compatible



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with the war effort, nor can criticism be made of W.P.B. determination to screen out all projects which can be safely postponed; but there is evidence that the country's highway and street transportation facilities, in many parts of the country, have reached a dangerous stage of disrepair. Furthermore, housing and public works to service the housing are inadequate. The way is open for W.P.B. to approve strong showings for essential construction, and right now at least war housing is getting as much attention as any other phase of fighting the war.

Washington News

(Continued from page 33)

of equipment under such control, the Field Offices will hold the case and forward the necessary forms to the proper division in Washington for its action. The divisions will return such forms to the Field Offices either approved or denied within three days of the receipt of the form.

After the sixty-day period, it is intended that the Field Offices will be authorized to release such equipment on a P-19 authorization (construction) if the restricting orders have been so amended, or to authorize the Field Offices to process the new standard equipment form, WPB-1319. If a release is made on P-19 or on WPB-1319, the Field Office will immediately furnish the division with copies of forms relating to each action taken.

P-56 Revised

W.P.B. PART 982, Preference Rating Order P-56 as amended October 29, 1943:

(b) *Purpose and scope.* The purpose of this order is to provide procedures for producers to obtain maintenance, repair, and operating supplies and mining machinery and other material and equipment.

(c) *CMP Regulation No. 5 not applicable.* None of the provisions of CMP Regulation No. 5 shall apply to any producer, as defined herein, and no such producer shall obtain any material under said regulation.

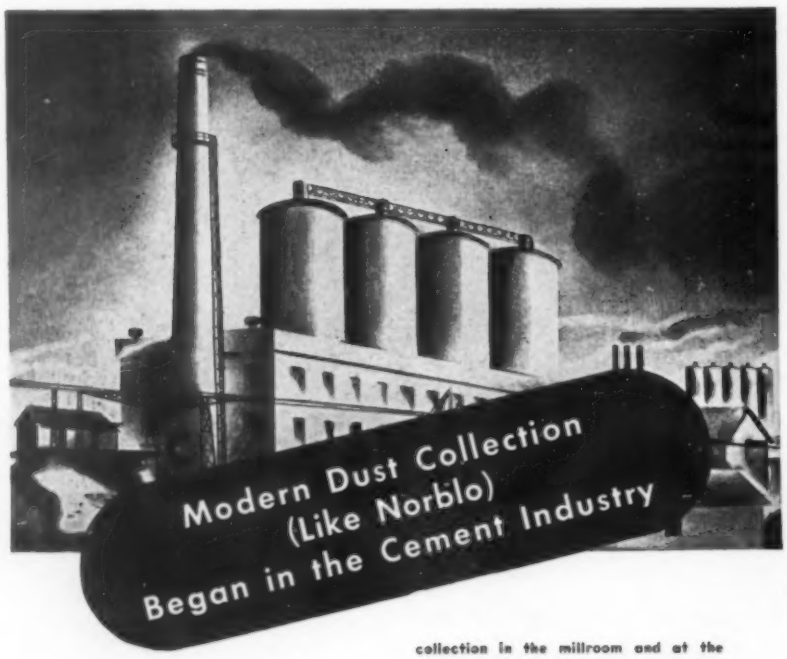
(d) *Issuance of serial numbers.* Producers and districts may apply to the War Production Board for serial numbers. Such applications may be addressed to War Production Board, Washington, D. C., Reference: P-56, or may (in the case of producers) be filed with the appropriate War Production Board Regional Office, Attention: Regional Technical Adviser, Mining Equipment Division, or with the appropriate State Co-ordinator of Mines. Serial numbers may be issued to producers and districts and may be denied or cancelled by the War Production Board in appropriate cases. In taking such action and in assigning priorities assistance, the War Production Board will consider the importance to national defense of the present and prospective output of materials to be produced, the consumption of critical material involved, the importance to national defense of competing demands for such material, and competing demands for manpower.

(e) *Priorities assistance for producers with serial numbers.* Producers holding serial numbers may apply for priorities assistance as follows:

(1) For maintenance, repair and operating supplies, by filing the appropriate form in the PD-400 series.

(2) For mining machinery and other material and equipment, by submitting to the War Production Board a written application describing the machinery or equipment needed, the reasons why such machinery or equipment is essential for the proper operation of the producer's

(Continued on page 92)



● Some historian of the future may think it worth while to inquire why the cement industry has received so little credit for its genuine inventiveness. It was the first large scale manufacture employing continuous production methods and continuous materials control. It was the first large scale chemical synthesis and is still the largest. So cement was the first big industry to modernize.

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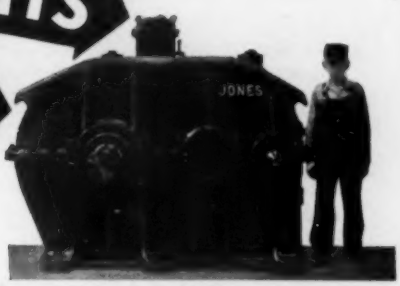

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P-56 W.P.B. Revised

(Continued from page 90)

plant, and such other or further information as may from time to time be required, and shall also file such forms and supply such information as may be required by the provisions of any other order with respect to any particular type of equipment.

(f) *Priorities assistance for certain foreign producers.* To enable a producer not holding a serial number hereunder and located outside the United States and within the jurisdiction of a district, to obtain priorities assistance, the following procedure is established:

(1) For maintenance, repair, and operating supplies, a district may apply for priorities assistance by filing the appropriate form in the PD-400 series, and the War Production Board will grant such priorities assistance as it deems appropriate. A producer not holding a serial number and located in a district may apply for priorities assistance by submitting to such district his purchase orders for maintenance, repair or operating supplies, together with such information as the applicant may deem relevant in support of his application and such information as may be required by the district. Within the limits of the priorities assistance granted to it pursuant to this paragraph (f) (1), such district may authenticate any such purchase order for maintenance, repair or operating supplies by indicating the appropriate priorities assistance and countersigning the purchase order as follows:

Approved:

.....

Name of district

.....

Signature of authorized official

(2) For mining machinery and other material and equipment, a producer not holding a serial number and located within a district, may submit to the War Production Board a written application containing the information described in paragraph (e) (2), which must be endorsed with the signed approval of the district within which he is located.

(3) A distributor of maintenance, repair or operating supplies or of other mining machinery or equipment, located outside the United States and within the jurisdiction of a district may apply for priorities assistance in the same manner as prescribed in paragraphs (f) (1) and (f) (2) for producers not holding serial numbers and located within the jurisdiction of a district. A distributor shall not dispose of material so acquired except upon written approval of the district.

(g) *Priorities assistance in other cases.* A preference rating of AA-5 is hereby assigned to deliveries of maintenance, repair, and operating supplies to all producers not holding serial numbers or otherwise specifically provided for in this order. Such producers may apply for priorities assistance for mining machinery or equipment, or for further priorities assistance for maintenance, repair, or operating supplies, by submitting to the War Production Board a written application containing the information described in paragraph (e) (2).

(g-1) *Emergency procedure.* In case of actual or impending breakdown, application for priorities assistance may be made on form PD-333 or by telegraph, and may be made either to the Washington office or the nearest regional or district office of the War Production Board.

(h) *Restrictions on use of priorities assistance.* Notwithstanding the provisions of any other order or regulation of the War Production Board, no producer shall acquire any mining machinery or equipment, or maintenance repair, or operating supplies through use of a preference rating or

(Continued on page 94)

Why cost-minded producers are installing *Simplicity* gyrating screens

There's nothing mysterious about the outstanding sales success of Simplicity gyrating screens in the aggregate industry. Producers are simply comparing first costs, depreciation costs, maintenance costs, and production speed of Simplicity units. And they soon see that Simplicity's give them by far the greatest value for their money.

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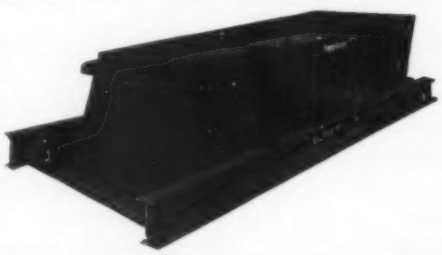

Right: A 5'x 12' Model D double deck Simplicity gyrating screen.

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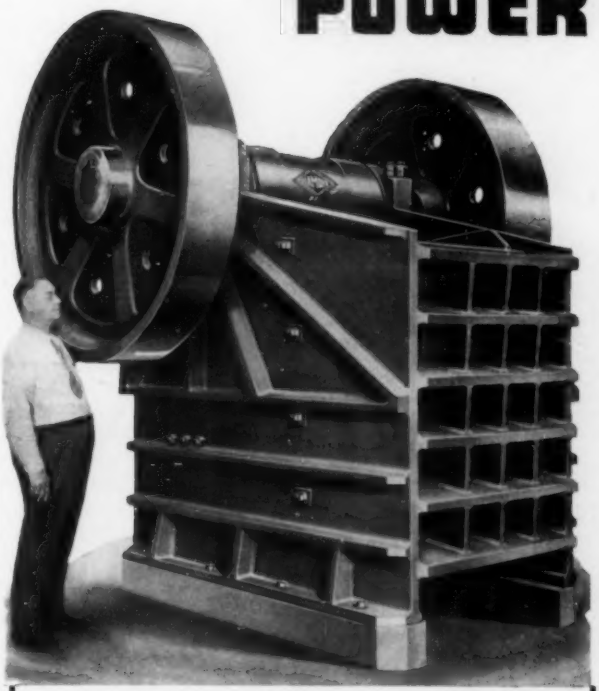

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P-56 Revised

(Continued from page 92)

other form of priorities assistance assigned otherwise than pursuant to this order or an order in the P-19 series.

(i) *Application and extension of priorities assistance.* Preference ratings assigned and allotments of controlled materials made pursuant to this order shall be applied, extended or made in accordance with the terms of Priorities Regulation No. 3. CMP Regulation No. 1, or other relevant War Production Board regulation. A producer in making use of any such priorities assistance, shall endorse on his contract or purchase order "P-56, Serial number ....," inserting in the blank his serial number hereunder, if any. The use of such endorsement by a producer shall constitute a representation, subject to the criminal penalties for misrepresentation contained in section 35A of the Criminal Code (18 U. S. C. 80) that the item ordered will be used for the purpose for which priorities assistance was granted to acquire it.

(j) *Restrictions on receipts and inventory.* Notwithstanding the provisions of any other order or regulation of the War Production Board, including CMP Regulation No. 2 receipts and inventories of producers shall be subject to the following restrictions only: No producers shall receive any delivery of material which will increase his inventory to an amount greater than the minimum necessary to sustain his current level of operations, and the ratio of such inventory to current production shall in no event exceed the ratio of average inventory to average production for the years 1938, 1939, and 1940.

(k) *Restrictions on use and resale of material.* No person shall use any material obtained pursuant to this order for any purpose other than that for which priorities assistance was granted to acquire it; and no person shall resell any such material except:

(1) To a producer holding a serial number hereunder, or

(2) With the approval of the Mining Equipment Division, or

(3) If he is located outside the United States and within a district, with the written approval of such district.

(l) *Records, audits, and reports.* Each producer and each distributor shall keep and preserve for a period of not less than two years accurate and complete records of all transactions affected by this order, and shall submit from time to time to audit

(Continued on page 96)

The Williams "SLUGGER" Crusher and Pulverizer Handles "ONE MAN" Stone • Saves Sledging

Also Makes 1¼", ¾" or Agricultural Limestone in One Operation

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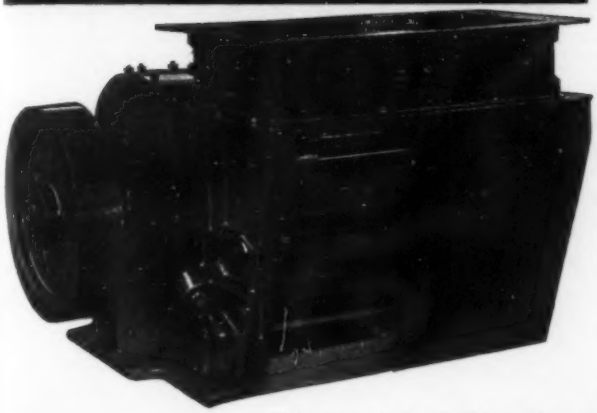

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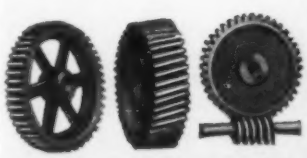

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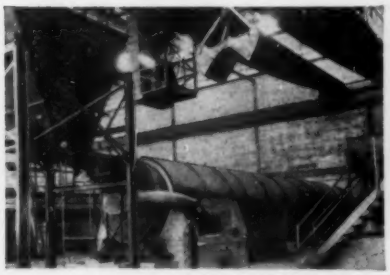

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P-56 Revised

(Continued from page 94)

and inspection by duly authorized representatives of the War Production Board. Each producer and each distributor shall execute and file with the War Production Board or other designated agency such reports and questionnaires as the War Production Board may from time to time require.

(m) *Appeals.* Any appeal from the provisions of this order shall be made by filing a letter in triplicate, referring to the particular provision appealed from and stating fully the grounds of the appeal.

(n) *Communications.* All reports and applications hereunder and all other communications with respect to this order shall, except as otherwise specifically provided, be addressed to War Production Board, Washington, D. C., Reference: P-56.

Miscellaneous Minerals Inventory Restrictions

W.P.B. PART 3286: Section 3286.76, General Inventory Order M-161 has been amended October 11 to read as follows:

(a) *What this order does.* This order excepts certain materials from inventory restrictions and from limits on the purchase of maintenance, repair, and operating supplies. The exception is made in some cases because there is no serious shortage of the material and in other cases because the material is available in quantity only in certain seasons, so that it is desirable to permit persons to buy and store it without limit.

(b) *Exception to inventory restrictions.* Section 944.14 of Priorities Regulation 1, which restricts inventory to a practicable working minimum, does not apply to the materials listed on Schedule A. Each of these materials is also exempted from all inventory restrictions in any other regulation or order of the War Production Board unless they expressly mention the material.

(c) *Exemption from restrictions on maintenance, repair, and operating supplies.* The materials listed on Schedule A are not subject to any restrictions in any regulation or order of the War Production Board which limit the quantity of material received or ordered for maintenance, repair, or operating supplies during any period on the basis of the amount of such supplies purchased during a base period. A person may receive or order for delivery any quantity of listed materials without regard to these restrictions. He does not have to charge his orders for any such material against his base-period quota except to the extent that purchases of the same material were taken into account in arriving at his quota. For example, a manufacturer operating under CMP Regulation 5 is limited in his purchases of maintenance, repair, and operating supplies to the amount which he spent in the base period. A manufacturer who spent $50,000 during the base period, including $500 for lead, may buy any amount of lead during the current period, and may use his MRO rating for that purpose, and he need include only $500 of the amount thus spent for lead in figuring the amount to be charged to his quota of MRO.

SCHEDULE A

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Sizes 4" to 30" in diameter—all types of fittings, connections and fabrications.

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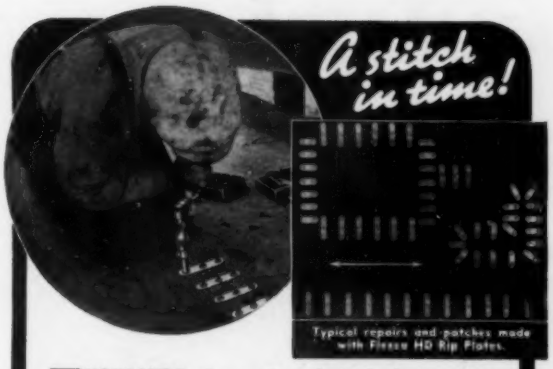

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NO GREASE OR OIL FITTINGS

on

WISCONSIN HEAVY-DUTY AIR-COOLED ENGINES

In today's war production set-up, even the saving of fractional manpower for servicing grease cups and oil fittings is important. And neglect of this attention can mean serious damage to irreplaceable production equipment. This can't happen with Wisconsin Engines because there are no grease cups or oil fittings; no lost manpower; no chance for human error or carelessness. Wisconsin Engines are protected by positive force-feed and splash lubrication.

MOST POWER PER POUND

WISCONSIN MOTOR Corporation

MILWAUKEE, WISCONSIN, U. S. A.

World's Largest Builders of Heavy-Duty Air-Cooled Engines

STEAM—GASOLINE—DIESEL LOCOMOTIVES—ELECTRIC OR MECHANICAL DRIVE

BIG in PERFORMANCE LOW in MAINTENANCE

Your participation in the expanding economy of the post-war years will call for maximum production at minimum costs. That's why it will pay you to include "Haulage by Davenports" as an important part of your future operations.

Better-Built Davenports deliver superb performance with top efficiency and extra years of trouble-free operation. We will gladly analyze your requirements as a preliminary to prompt deliveries when the time comes for post-war action.

Entrust Your Post-War Haulage to Modern Davenports

EXPORT OFFICE **BROWN & SITES** 50 Church St., N. Y. Cable Add. "Brosites"

DAVENPORT LOCOMOTIVE WORKS

A DIVISION OF DAVENPORT BESLER CORPORATION DAVENPORT IOWA

STEAM—GASOLINE—DIESEL LOCOMOTIVES—ELECTRIC OR MECHANICAL DRIVE

FINANCIAL NOTES

RECENT DIVIDENDS

Basic Refractories, Inc.	$ .10	Dec. 15
Calaveras Cement Co. pfd.	.75	Dec. 15
Canada Cement Co., Ltd., 6½% pfd. (p100) (arrears)	1.25	Dec. 20
Canada Crushed Stone Co.	.10	Dec. 15
Consolidated Cement Corp. A	.20	Dec. 15
Ideal Cement Co. Comm. (p10)	$ .15 ext.	Dec. 22
Kelley Island Lime & Transport Co.	.20	Dec. 20
Lone Star Cement Corp.	.75	Dec. 23
National Gypsum Co.	.25	Dec. 30
Ohio River Sand Co., 7% pfd. (p100) (arrears)	1.75	Dec. 1
Pacific Coast Aggregates, Inc., E.	.18	Dec. 20
Pacific Coast Aggregates, Inc., Q.	.03	Dec. 20
Pacific Portland Cement Co. 6½% pfd. (p100) (arrears)	1.00	Oct. 29
Pacific Portland Cement Co. pfd. Ac	2.50	Dec. 10
Pennsylvania-Dixie Cement Corp. $7 pfd. A (np) (arrears)	.50	Dec. 15
Pennsylvania Glass Sand Corp.	.25	Jan. 1 1944
Pennsylvania Glass Sand Corp., pfd.	1.25	Jan. 1 1944
Southern Phosphate Corp.	.15	Dec. 13
U. S. Gypsum Co.	.50	Dec. 31
U. S. Gypsum Co., pfd.	1.75	Jan. 3

•

LONE STAR CEMENT CORPORATION, New York, N. Y., presented the following earnings statement for the three months' period ended September 30:

	1943	1942
Sales	$7,885,213	$10,409,567
Mfg., etc., costs	4,964,250	5,654,406
Selling exp., etc.	699,054	758,090
Depreciation & depletion	503,314	548,544
Operating profit	1,718,595	3,448,527
Other income	92,460	90,098
Total income	1,811,055	3,538,625
Fed. inc. tax., etc.	995,421	2,274,538
[1]Misc. charges	178,674	364,337
Net profit	636,960	899,751
9 mos. to Sept. 30:		
Sales	$23,063,795	$26,459,683
Mfg., etc., costs	13,918,930	14,349,445
Selling exp., etc.	2,064,402	2,228,940
Depreciation & depletion	1,617,551	1,766,088
Operating profit	5,462,912	8,115,210
Other income	273,891	279,908
Total income	5,736,803	8,395,118
Inc. & prof. tax.	2,534,729	4,445,000
Other taxes	677,349	676,663
[1]Misc. charges	515,877	992,203
Net profit	2,008,848	2,281,252

[1]Includes provisions for doubtful accounts and contingencies.

•

PACIFIC COAST AGGREGATES, INC., San Francisco, Calif., reported an indicated net income for the third quarter of 1943 of $94,688 after federal taxes and charges. This is equal to 17c a share on 556,265 capital shares, and it compares with 18c a share in the second quarter, and about 43c a share in the third quarter last year, which was an unusually big quarter in point of earnings. Net income for the first nine months of 1943 amounted to $302,994 as compared with $501,165 for a like period in 1942. Sales for the first nine months of 1943 were $4,781,250 as against $4,207,448 for a similar period in 1942.

•

WASHINGTON BRICK & LIME CO., Spokane, Wash., has finally received the approval of the federal court for the reorganization into a new company. Stockholders in the defunct company receive one share of stock in the new corporation for each 10 shares of old stock.

SCREW WASHERS
•
PADDLE TYPE LOG WASHERS
•
SAND TANKS
•
CLASSIFIERS
•
SAND DEWATERERS
•
GRAVEL CRUSHERS
•
SWINTEK SCREEN NOZZLE LADDERS

The New Eagle High Efficiency Paddle Washers for operators with moderate capacities.

The New Eagle Dewaterers for extra low moisture content products.

As a result of our pioneering efforts and wide experience in the field, there is an Eagle unit for every washing, dewatering or classifying problem you may encounter. Eagle engineers have sponsored and guided the major developments in these fields. Write or wire us.

EAGLE IRON WORKS
Des Moines, Iowa

PENNSYLVANIA GLASS SAND CORPORATION, Lewistown, Penn., showed a net income of $470,416 for the first nine months of 1943. This compares with $441,854 for a like period in 1942.

•

CONSOLIDATED CEMENT CORP., Chicago, Ill., presented the following statement of earnings for the nine months ended September 30:

	1943	[4]1942
Net sales	$1,775,040	$2,433,813
Cost of sales	1,234,542	1,607,970
[1]Selling, etc., expense	317,860	343,755
[2]Oper. profit	222,638	482,089
Income bond int.	49,596	49,029
Income note int.	5,153	5,202
Bond disc. & exp.	5,816	6,391
Loss on assets	2,810	
[3]Net profit	159,263	421,466
[3]Times chg. earn.	3.63	7.95
[3]Earn., cl. A sh.	$1.59	$4.19
No. cl. A shares	99,916	100,513

[1]Includes expense applicable to non-operating periods (less miscellaneous income).

[2]Before Federal income taxes.

[3]After depreciation and depletion: 1943, $146,508; 1942, $148,508.

[4]Revised.

•

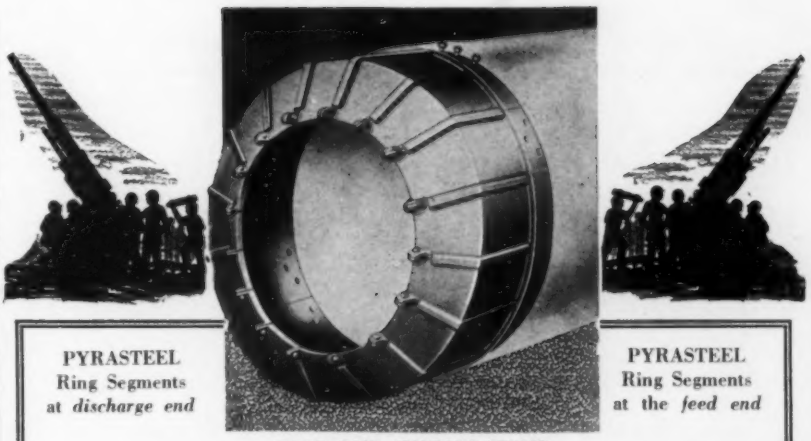
CONSOLIDATED ROCK PRODUCTS CO., Los Angeles, Calif., has submitted a plan for reorganization. Under the plan, the company will have a simplified stock structure with only two classes of securities outstanding: $2,944,000 of new first mortgage bonds to be dated May 1, 1942, and to bear 3 percent fixed interest and addition 2 percent non-cumulative income interest, and approximately 3,197,000 shares of common stock, $1 par value.

Holders of the present bonds, issued by Union Rock Co. and Consumers Rock & Gravel Co., Inc., will receive all the new bonds and 80 percent of the new stock. Holders of the preferred stock of Consolidated Rock Products Co. will receive the remaining 20 percent of the stock. Holders of present common stock are entitled to no participation under the plan.

For each $1000 principal amount, bondholders will be entitled to a new $1000 bond, from 832 to 892 shares of new stock, depending upon the amount of accrued interest on the old bonds, and approximately $65 in cash, representing the interest on the new bonds since May 1, 1942. For each 100 shares of preferred stock now outstanding, holders will be entitled to approximately 223 shares of the new stock.

Under the plan, dividends are not to be paid on the new stock until the new bonds have been reduced to $125,000. Until that time all net income is to be applied to interest or retirement of the new bonds.

The plan of reorganization has been approved by U. S. District Judge Harry A. Holzer.



PYRASTEEL Ring Segments at *discharge end*

PYRASTEEL Ring Segments at the *feed end*

FEED END INSTALLATION

PYRASTEEL Protection at *both* ends

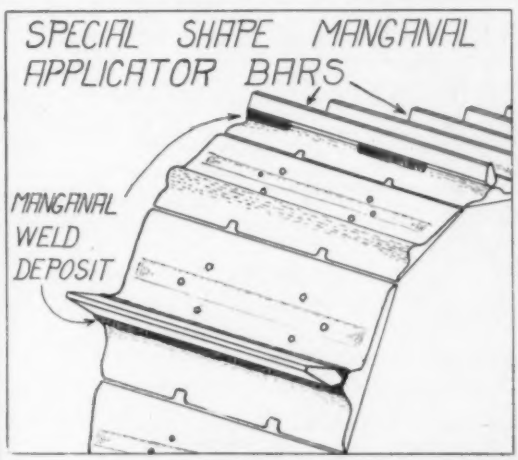
You can't afford to risk kiln-end "burnouts" that cause serious shut-downs and costly repairs. Remember that PYRASTEEL Kiln-Ends are available for both the *discharge and the feed ends* of your rotary kiln. They give continuous service at high temperatures, and outlast ordinary castings many times over . . . as proved in scores of installations where PYRASTEEL is giving satisfactory results. *Write for Bulletin of this "Sure-Fire" heat-resisting alloy.*

CHICAGO STEEL FOUNDRY COMPANY
KEDZIE AVE & 37TH ST
CHICAGO
Makers of Alloy Steel for 30 Years
PYRASTEEL for high temperatures
EVANSTEEL for strength

MANGANAL

(Reg. U. S. Pat. Office, U. S. Patents 1,876,736—1,947,167—2,021,945)

SPECIAL SHAPE APPLICATOR BARS FOR TRACTOR GROUSER RE-TREADS



MADE IN FIVE SIZES EASILY WELDED TO ANY SHAPE OR SIZE GROUSER. PROVIDES A RE-TREAD FOR ALL TRACK LAYING TYPES OF EQUIPMENT.

Attach with Manganal Bare or Special Tite Kote welding electrodes. Applicator bars are manganese nickel steel, the toughest metal known. Work hardens under impact and abrasion. New parts are difficult to obtain. Saves approximately 80% of the metal of a new part, as well as time and money.

150 Distributors Are Ready to Serve You

Sole Producers

STULZ-SICKLES COMPANY

134-142 Lafayette St., Newark, N. J.

Try Seaco Hard Surfacing Over Manganal Weld Deposits

★ Use 5 or 10 Buckets to each unit

★ 15 Seconds for loading or dumping

Use the **LOAD LUGGER** *for Stripping*

. . . quarrying . . . feeding crushers . . . road building . . . construction jobs . . . and moving any bulk materials where loading is done by hand.

Brooks LOAD LUGGERS mounted on your trucks will go a long way to solve your material handling problems in 1944. The saving in manpower, maintenance and equipment costs are important in contract jobs. If you are short of trucks, then mount a LOAD LUGGER on the chassis and make each truck do extra duty.

Write for Catalog No. 44 . . . it gives full details of this modern material handling unit.

812 Davenport Road Knoxville, Tennessee

Distributors in all Principal Cities

Brooks EQUIPMENT AND MFG. CO.

We Own and Offer

NEW AND USED EQUIPMENT

SPECIAL

1—Rotary Converter, 1000 K.W. Westinghouse 250-V. D.C. Complete with boards and controls for both sides. Transformer, 1100 KVA, 3 phase Westinghouse input 22,000 volts.

1—F.M. Deisel Generator, 100 KVA direct connected. Complete with all auxiliaries and panel board.

1—Turbine, Westinghouse 100 H.P. 2700 R.P.M. direct connected to Westinghouse reducing gear, ratio 3 to 1.

AIR COMPRESSOR

Ingersoll-Rand Duplex, 11x14 Type B, 563 cu. ft. displacement, 185 RPM with receiver and 100 H.P. motor and starter, either AC or DC.

AGITATORS

23—For 12'x12' Tanks.

DERRICK & CRANE

1—**DERRICK**—Steel Guy Derrick, 110 ft. Mast, 90 ft. Boom, equipped with Clyde three-drum hoist, General Electric 84 H.P., 230 Volt D.C. totally enclosed motor.

1—**JIB CRANE**—Brownhoist, No. 5991, 45' arm, capacity 4500 lbs.

DRYER—ROTARY

1—3½x44 ft.

KILNS & COOLERS

VULCAN, 7'x120', condition like new, also various others.

FEEDERS

2—**BAILEY FEEDERS**, Type No. 2, complete with steel hoppers, 8½ dia. x 12 ft. cone bottom, 12" screw conveyor, enclosed, 30' long bucket elevator, 36x12x25, steel housing.

2—**FEEDERS**, Ferris Wheel Type, 4'6" wheel, 7x8x10 in. bucket, steel case.

FLOATING EQUIPMENT

1—**DREDGE**—Manufactured by the American Steel Dredge Co., 64'x30'x6', steel Hull complete with all auxiliaries ready to operate locomotive type boiler—Union Steam Company Pump, Pyle National Company Generator, Holst Compound Engine 8"x10" Cylinders—2—28"x15" Chain Drums, Bull Gear, Pinion and Brake for each drum, 900 ft. ¾" Chain on Drums 100 ft. ¾" Chain spare, 2—8"x15" Nigger-Head "Service Work" Spuds—1 each side Rack 30' long, 2" pitch, 7" face, 30" section of rack, separate steam engine for each spud, compound engine, 5"x8" cylinders, gear to counter-shaft, worm gear to spud pinion, worm gear 30", pinion 6", boom 60' long. 11"x12" box type, bucket 1¼ yd. Hayward.

1—**TUG** Manufactured by the American Steel Dredge Co. 40'x13'x6', ¼" Steel Plate Hull, Roller and Engine.

3—**SCOWS**—Steel Construction, 58'x16'x6' built by Johnson Bros.

1—**MACHINE BOAT**—Johnson Bros., 54'x17'x 6'6", complete with dump hopper, cutter, scraper, elevator and loader. Driven by compound steam engine.

GRINDING EQUIPMENT

1—**PUG MILL**—15" diameter x 8½" with heaters.

1—**TUBE MILL**—5'x30'. F. L. Schmidt.

1—**TUBE MILL**—5x22 ft., F. L. Schmidt Co.

2—**RAYMOND MILLS**—4 roll.

SCREENS

4—**SCREENS**—4'x5', W. S. Tyler Co. Hummer Screens, complete with generator.

1—**ROTARY SCREEN**—18"x8'.

STEEL STACK

145 feet high—6½ feet diameter. ¼ inch steel.

WEBBER EQUIPMENT CO.

New and Used Equipment

17 East 45 St., MU. 2-6511 New York City

OBITUARIES

BUD H. RADER, vice-president of the Lehigh Portland Cement Co., Allentown, Penn., and one of the most widely known men in the cement industry, died recently at his home in Chicago, Ill., at the age of 65. A native of West Virginia, Mr. Rader was with the Universal Portland Cement Co. in Pittsburgh until he became associated with Lehigh in 1917 as western sales manager. He has been in charge of the company's Chicago office since that time and since 1928 has been a vice-president.

•

HOMER LITTLEFIELD, manager of the mining department of the Marion Steam Shovel Co., Columbus, Ohio, died suddenly at his home at the age of 66. He had been with the company for about 20 years. Before joining the Marion Steam Shovel Co. Mr. Littlefield was manager of the General Electric Co. office at Columbus, Ohio, for 12 years.

•

FRANK A. ROSS, senior vice-president of Stewart-Warner Corp., Chicago, Ill., died recently at the age of 60.

•

MRS. MARGARET ANN RENWICK, wife of Frank W. Renwick, president of the Chicago Gravel Co., Chicago, Ill., died recently at her home in Geneva, Ill., at the age of 75.

•

WILLIAM G. FITZPATRICK, vice-president of J. F. Fitzpatrick, Inc., a sand and gravel company of Worcester, Mass., passed away recently.

•

V. ELMER MILLER, district sales manager, Louisville Cement Co., Memphis, Tenn., died recently.

•

J. T. GILLESPIE, plant manager, Mutual Materials Company, Seattle, Wash., died recently. He had been with the company for more than 10 years.

•

CLIFFORD L. MILLER of Claverack, N. Y., owner of the Miller lime plant in West Stockbridge, Mass., passed away recently following a long illness.

•

MRS. WILLIAM M. ANDREWS, wife of the president of the Union Limestone Co., New Castle, Penn., died recently at the age of 58.

•

WALTER KENNEDY, operator of the Welsh Sandler Sand Co., Bonner Springs, Kan., died recently after a short illness.

MRS. GEORGE C. WALTER, wife of George C. Walter, president of the Southern Cement Co., Birmingham, Ala., died recently at the age of 61. Besides her husband, she is survived by two sons, Maj. George C. Walter, Jr., who is in South Africa, and Capt. Charles W. Walter, who is in Sicily, and one daughter, Mrs. T. R. Summer, Newberry, S. C.

•

HARRY A. BECKER, secretary-treasurer and auditor for the Ingalls Stone Co., Bedford, Ind., for the past nineteen years, died recently at the age of 58. Mr. Becker was employed for several years by an auditing firm in Indianapolis, and during this employment audited books of the Ingalls Stone Co. before accepting a position with the company in 1924 as secretary-treasurer and auditor.

•

WILLIAM FRED HEMLER, part owner of the Twin City Gravel Co., Southern Equipment and Tractor Co., and Concrete Materials Co., Monroe, La., was instantly killed when his plane went into a tail spin and fell into Black Bayou 12 miles northeast of Monroe. He was 37 years of age.

•

DAVID B. PIERSEN, chairman of the Stephens-Adamson Mfg. Co., Aurora, Ill., died recently at the age of 63. He was widely known throughout the industry. Born in Chicago, Ill., Mr. Piersen, following his graduation from the Evanston, Ill., high school in 1898, was employed for the next four years as a clerk in the office of the Webster Mfg. Co., Chicago. In 1902 Wiley W. Stephens, vice-president of the Webster company, and F. C. Adamson, who had been associated with the same firm, went to

David B. Piersen

PULVERIZERS for the reduction of Cement Materials, Limestone, **Agricultural Limestone,** Fire Clay and All Dry, Refractory Materials.

Capacities: 1 to 60 tons per hour **Finenesses: 20 to 350 mesh**

BRADLEY PULVERIZER CO.

ALLENTOWN, PENNA.

To Increase Capacities or Fineness of Present Grinding Plant—
To Reduce Power and Maintenance Costs—
To Insure an Absolutely Uniform Product—

***Use the* BRADLEY AIR SEPARATOR**

Ty-Rod THERE IS A Ton-Cap

TYLER

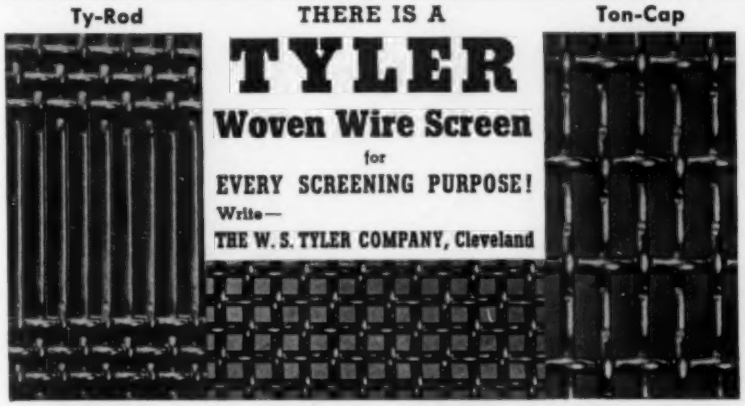
Woven Wire Screen

for

EVERY SCREENING PURPOSE!

Write—

THE W. S. TYLER COMPANY, Cleveland



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Completely controls the flow of any size material from Storage Bins, Hoppers or Open-Dump Chutes to Crushers, Conveyors, Screens, etc.

High in efficiency. Low in maintenance and power consumption.

Furnished in sizes to suit your operation. Send full particulars for recommendation.

ROSS SCREEN & FEEDER CO.

19 Rector Street
NEW YORK, U. S. A.

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SURBITON, SURREY, ENG.

Canadian Licensee: E. Long, Ltd., Orillia, Ontario

Alpha products have been used since 1878

Welded Elevator Buckets all sizes. Screw and Belt Conveyors, Storage Bins any size or type. Bin Gates Special Designs—Tanks, Pressure and Storage, all sizes. Plate and Sheet Metal Specialties.

AN A-A PRODUCT
ALPHA

Alpha Tank & Sheet Metal Mfg. Co.

5007 South 39th Street, St. Louis, Missouri

Aurora to found the Stephens-Adamson Mfg. Co. They took with them young David Piersen, who had worked under Mr. Stephens' direction and in whom they recognized exceptional energy, shrewdness, integrity and business ability. Mr. Piersen not only sold conveying equipment but also helped to make it in the company's shops. He was soon made secretary of the firm, a position which he held from 1902 to 1910 while in charge of the Chicago office. In 1910 he returned to Aurora as vice-president in charge of sales and in 1914 was made general manager of all operations. His elevation to president of the company came in 1923, and in 1934 he was made chairman of the board of directors.

•

COL. WILLIAM M. HATCH, former president of the Peerless Cement Corp., Detroit, Mich., passed away recently. Col. Hatch was secretary and general manager of the Portland Cement Co., Union City, before the Peerless Cement Corp. was founded. He was a veteran of the Spanish-American war and a colonel on Governor Bliss' staff in 1908.

•

MICHAEL DOYLE, president of the Union Talc Co., and the United States Talc Co., Rochester, N. Y., died recently at the age of 83.

•

D. J. SHELTON, president and general manager, The Marion Steam Shovel Co., Marion, Ohio, passed away recently after 34 years of continuous service to the company he headed.

HAMMOND
MULTI-WALL PAPER BAGS
HAMMOND
Better bags
WELLSBURG, W.VA.
Sewn and Pasted
Open Mouth and
Valve Paper Bags.
Your Inquiries Invited.
WRITE TODAY!
HAMMOND BAG & PAPER CO.
Paper Mill and Bag Factory at WELLSBURG, W. VA.

McLANAHAN
EQUIPMENT
for ROCK—
SAND—GRAVEL
Single and double roll and jaw crushers, hammer mills, super dry pans, steel log washers and scrubbers, sand drags, revolving and vibrating screens, elevators, conveyors, dryers, jigs, hoists. Complete portable, semi-portable and stationary crushing, screening and washing plants for different capacities of any materials.
McLanahan & Stone
Corporation
Established 1835
Hollidaysburg, Pennsylvania

WILFLEY
centrifugal SAND PUMPS
for Slurries, Sand Tailings
Slimes, Acid Sludges
Save Pumping Cost
Continuous operation without attention for long periods. Stuffing box, stuffing, gland water ALL eliminated. Close clearances maintained by easy slippage seal adjustment. Heavy pumping parts of material best suited for YOUR particular problem. Complete engineering service. Prompt shipment of parts. The most efficient and economical pump you can buy. *Write for Complete Catalog*
A. R. WILFLEY & SONS, Inc. Denver, Colo., U. S. A.
NEW YORK OFFICE: 1775 BROADWAY

SUPER-LOY
WOVEN WIRE SCREENS
LUDLOW-SAYLOR
WIRE CO. ST. LOUIS

HAYWARD
WON'T QUIT
OR CAUSE TIME OUT
A Hayward Bucket keeps the job going ahead on scheduled time. It won't quit or cause time out.
THE HAYWARD COMPANY
202-204 Fulton Street
New York, N. Y.
BUCKETS

BEMIS MULTIWALL BAGS
FOR EXTRA PROTECTION
IN SHIPPING
AND STORAGE
BEMIS BRO. BAG CO.
Peoria, Ill. • East Pepperell, Mass.
Mobile, Ala. • San Francisco, Calif.
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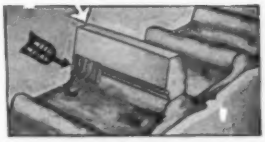
CEMENT

Rebuild your
TRACTOR GROUSERS
WITH BULLDOG
Grip-Lugs

EASILY  WELDED

Send for Bulletin RP-6

INCREASES TRACTION
EFFICIENCY
A QUICK AND
ECONOMICAL REPAIR

Allied Steel Products, Inc.
N. B. C. Bldg., Cleveland 14, Ohio

HAVE YOU A TOUGH SCREENING PROBLEM?

IF SO, WE MAY HAVE THE ANSWER

We are a SCREENING company with a long and varied experience in the screening field that enables us to correctly analyze and solve most difficulties.

Why not try us? No obligation entailed.

SCREEN EQUIPMENT CO., INC.
9 Lafayette Ave. Buffalo, N. Y.

builders of

SECO

vibrating screens

Manufacturers' News

Blaw-Knox Co., Pittsburgh, Penn., was recently honored for its participation in the creation of the American Synthetic Rubber Industry by the 1943 Committee of Award for Chemical Engineering Achievement. William P. Witherow, president of the company, was present to receive the award which was made by Colonel Alfred H. White, chairman of the Award Committee. Major General L. H. Campbell, chief of Ordnance, U. S. Army; Bernard M. Baruch, chairman of the Rubber Survey Committee, and William M. Jeffers, president of the Union Pacific Railroad, were speakers at the award.

Fairbanks-Morse & Co., Chicago, Ill., has announced the following changes in personnel: O. O. Lewis, formerly branch manager, Atlanta, Ga., has been promoted to the position of assistant general sales manager of the company, Chicago, Ill.; V. O. Harkness, former manager of the Dallas, Texas, branch, has been appointed manager of the Diesel engine sales division, Chicago, Ill.

Koehring Co., Milwaukee, Wis., has been awarded the Army-Navy "E" pennant for excellence in the production of war equipment.

Stearns Mfg. Co., Inc., Adrian, Mich., has been presented with the first white star for its Army-Navy "E" pennant, which was awarded the company last May, for continued excellence in the production of war equipment.

American Manganese Steel Division of the American Brake Shoe Co., Chicago, Ill., has appointed Joseph B. Terbell first vice-president of the Division. He has been with the company for 15 years.

Wickwire Spencer Steel Co., Buffalo, N. Y., announces that E. Perry Holder has been elected president. Mr. Holder succeeds E. C. Bowers, who has been connected with the company since 1911 and has been president since 1926. Mr. Bowers has resigned because of serious illness but will continue as a member of the board of directors and executive committee and act in an advisory capacity. Carl I. Collins will continue as executive vice-president in charge of production. Mr. Holder has resigned as president of the Vulcan Iron Works.

Cutler-Hammer, Inc., Milwaukee, Wis., has announced the appointment of W. E. Addicks as manager of the New York District Office.

Thermoid Co., Trenton, N. J., has appointed Clarence B. Moore head of the rubber division of Thermoid Research Laboratories, and Harry Bourne as methods engineer in charge of hose production for rubber division. Joseph Harrison, chief rubber chemist, will continue in his post, as will the rest of the rubber research staff.

The Elwell-Parker Electric Co., Cleveland, Ohio, is observing its 50th anniversary this year. The company was organized in 1893, but its corporate history begins with the birth in 1843 of Thomas Parker, one of the founders of the electrical industry in Great Britain. The old firm of Elwell-Parker Ltd. made motors and dynamos in Wolverhampton, England, and in 1893 licensed a separate company to build them in America. Early in 1900 the American Elwell-Parker interest bought out the British holdings.

Mack Trucks, Inc., New York, N. Y., announces the presentation of the National Security Award to Mack Manufacturing Corp. by the United States Office of Civilian Defense, Washington, D. C. This award is granted by the O. C. D. to plants and facilities which have achieved outstanding success in programs for the protection of employes, plants and production or service operations against fire, explosion, air raid, accident and other emergencies.

Made of
Acid Open Hearth
Steel Wire

Round Strand
Flattened Strand
Preformed
Steel Clad
Non-Rotating

The Service Record of this wire rope continues to make and hold friends.

MADE ONLY BY
A. LESCHEN & SONS ROPE CO.
Established 1857
5909 Kennerly Avenue St. Louis, Mo.
New York — Chicago — Denver
San Francisco — Portland — Seattle

REDUCING COST OF MOVING MATERIAL

Sauerman Scraper stores and reclaims wet phosphate rock at large drying plant.

THERE is three-fold economy in using a Sauerman Scraper or Cableway for digging and hauling or stockpiling. First cost of a Sauerman machine is moderate, operation is an easy one-man job and upkeep is simple.

Sauerman engineers will gladly study your material-handling problems. Their advice may save you money and will be given free.

SAUERMAN BROS., INC.
530 S. Clinton St., Chicago 7, Illinois

SAUERMAN
LONG RANGE MACHINES

Webber Equipment Co., New York, N. Y., announces that David A. Weill, electrical and mechanical engineer, is now associated with their company.

The Falk Corp., Milwaukee, Wis., announces the appointment of Thomas F. Scannell as general sales manager. John S. Wilkinson, who has been connected with the Falk foundry in various capacities for many years, will act as assistant sales manager in charge of foundry sales.

Davenport Besler Corp., Davenport, Iowa, has been awarded the Army-Navy "E" pennant for excellence in the production of war equipment, and the employes have been awarded the token "E" pins for their contribution to the war effort.

Brooks Equipment & Mfg. Co., Knoxville, Tenn., has announced the opening of a branch office and warehouse in Chattanooga, Tenn., at 1410 Cowart Street. J. Raymond Johnson has been appointed district manager and J. B. Ham will be store manager.

Ransome Machinery Co., Dunellen, N. J., a subsidiary of Worthington Pump & Machinery Corp., has been awarded the Army-Navy "E" pennant for outstanding war production. This is the eleventh award won by plants of this corporation.

The B. F. Goodrich Co., Akron, Ohio, announces the appointment of Chester F. Conner as assistant general manager and Fred Lang as merchandise manager of the industrial products sales division. Mr. Conner was formerly merchandise manager and Mr. Lang was manager of sole and heel sales.

United States Rubber Co., New York, N. Y., has announced the appointment of Harold I. Beadle, widely known chemical engineer, as sales manager for new products of the Naugatuck Chemical Division of the company. In this capacity, Mr. Beadle will handle sales of new synthetic rubbers and synthetic plastics and also new developments in other chemical fields being explored by the company. Harold J. MacDonald, formerly eastern district sales manager of the wire and cable department, has been placed in charge of all jobbing with the title of manager, jobbing sales. Howard F. Johnson, who started with the company in 1922, has been elevated to the position of western district sales manager. His new post is manager of branch sales.

Wickwire Spencer Steel Co., New York, N. Y., announces the appointment of Charles B. Konselman as advertising manager, succeeding George L. Randall, who was recently commissioned a Lieutenant (j.g.) in the U. S. N. R. and is now stationed temporarily at the Naval Air School, Quonset Point, R. I. Prior to joining Wickwire Spencer, Mr. Konselman was associated with the Royal Typewriter Co. as sales promotion manager. He was graduated from Columbia University in 1931, after which he studied Business Administration in the Graduate School, and has continued his specialized business study and practice since that time. Mr. Konselman will be located at the company's home office, 500 Fifth Ave., New York 18, N. Y.

Bachrach Photo
Chas. B. Konselman

Wickwire Spencer Steel Co., New York, N. Y., has announced the appointment of Robert T. Dunlap as assistant to the president. He was formerly general works manager of the Vulcan Iron Works.

Farrel-Birmingham Co., Inc., Ansonia, Conn., has received its third renewal of the Navy "E" award with three white stars for continued excellence in the production of equipment for the Navy.

The Foote Co., Inc., Nunda, N. Y., has been awarded the Army-Navy "E" pennant for its outstanding contribution to the war effort. This is the first award of this kind given for the exclusive manufacture of road pavers.

The Cooper-Bessemer Corp., Mt. Vernon, Ohio, has announced the opening of another Pacific Coast factory branch office. The new office, located at 401 Rust Bldg., San Francisco, Calif., will be under the supervision of service representative John G. McKissick.

Traylor Engineering & Mfg. Co., Allentown, Penn., has received a white star for its Army-Navy "E" pennant for meritorious services on the production front.

Nordberg Mfg. Co., Milwaukee, Wis., has been awarded a third star for its Navy "E" pennant, which was originally awarded in May, 1942, for continued excellence in the production of naval materiel, and an additional star for its Maritime pennant.

American Foundry Equipment Co., Mishawaka, Ind., has received a white star for its Army-Navy "E" pennant for maintaining high production standards in war equipment.

Link-Belt Co., Chicago, Ill., announces that Edward J. Burnell, vice-president and general manager in charge of the Pershing Road plant operations and central division sales, has been transferred to the Executive Office in Chicago. In his new position Mr. Burnell will be vice-president in charge of sales for the entire Link-Belt Company. Directly assisting Mr. Burnell will be Nelson L. Davis, sales manager for materials handling machinery; William H. Kinkead, sales manager for power transmission

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machinery; and C. Walter Spalding, sales manager for power transmission equipment. Harold L. Hoefman, manager of the Atlanta plant, succeeds Mr. Burnell as general manager of the Pershing Road plant. Richard B. Holmes, district manager at Indianapolis, has been appointed manager of the Atlanta plant to succeed Mr. Hoefman. David E. Davidson, district engineer at the Detroit office, has been named district manager at Indianapolis, to succeed Mr. Holmes.

General Electric Co., Schenectady, N. Y., has appointed Howard W. Bennett manager of the Specialty Division of the company's Electronics Department, according to an announcement by Dr. W. R. G. Baker, vice-president in charge of the department. In this capacity, Mr. Bennett will be responsible for the engineering, manufacturing, and sales operations of that division. Mr. Bennett attended the Detroit Institute of Technology, where he took the radio engineering course, and joined the General Electric in 1930.

The Timken Roller Bearing Co., Conton, Ohio, announces the appointment of W. H. Richardson as general manager of all activities of all divisions on the entire West Coast and in the Orient. Mr. Richardson has been with the company since 1917.

Caterpillar Tractor Co., Peoria, Ill., announces a program for increased production of Diesel tractors for military purposes. C. O. Wold, vice-president, will be in charge of the entire program. Charles Woodley, factory manager of the tractor plant, will become co-ordinator of the tractor production activities at Decatur and Berwick. William Naumann, assistant factory manager, will be acting factory manager in Mr. Woodley's absence. Some of the work will be done in the Victory Ordnance plants at Decatur, Ill., and the Berwick, Penn., plant of the American Car & Foundry Co. Certain important parts of the additional tractor production will be manufactured in the Peoria and San Leandro, Calif., plants. The above announcement was made by Louis B. Neumiller, president of the company.

Mack Trucks, Inc., New York, N. Y., has announced the appointment of A. N. Norton as vice-president and director of Mack Manufacturing Corp. and C. W. Haseltine as vice-president of Mack Trucks, Inc. Mr. Morton joined the Mack organization at the end of World War I as chief inspector at Plainfield, N. J., where he held a variety of executive offices and in 1941 was named factory manager. Two years later he became production manager of the factories at Plainfield and New Brunswick, N. J. and Allentown, Penn., a position he still retains. Mr. Haseltine joined the Mack company in 1912 as a clerk. In 1917 he became assistant secretary-treasurer, and the following year was named secretary treasurer, which position he retains in addition to his duties as vice-president.

The B. F. Goodrich Co., Akron, Ohio, announces that R. G. Cox, who has been with the industrial products organization of the company for the last 18 years, is now in charge of molded goods sales, succeeding E. R. Miller, who recently retired.

The Bristol Co., Waterbury, Conn., announces the appointment of J. W. Peckham as manager of the development and design engineering department of the company, He had been Pacific Coast district manager in charge of the company's San Francisco, Seattle, and Los Angeles offices and San Francisco branch factory. He will now make his headquarters in Waterbury, Conn. Mr. Peckham joined The Bristol Co. radio engineering department in 1922. E. Nuber, formerly manager of the Akron branch office and factory, has been appointed manager of the Pacific Coast branch offices and factory. Mr. Nuber joined The Bristol Co. in 1929 as sales engineer.

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Complete plants designed and equipped, including Screens, Elevators and Conveyors. Machinery for Mines and Rock Quarries, Sand and Gravel Plants.

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Quick Economical Repair by Welding. Sharp Teeth Save Power. Immediate Shipment on M.R.O. Priorities

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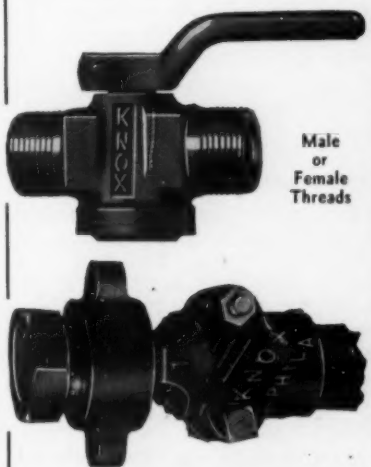

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Extend Gypsum Price Control

O.P.A. amendment No. 19 to Order No. A-1 Section 1499.159 b of M.P.R. No. 188, effective December 1, 1943, provides a six-month extension of the effective period of the price order establishing maximum prices for gypsum building material delivered to the West Coast from inland mills. January 1, 1944, was formerly specified as the date ending special consideration to the pricing of gypsum products shipped to the West Coast by inland producers. However, the volume of construction in progress and other projects contemplated for this winter and the spring of 1944 has led West Coast purchasers to place orders for more of the specified gypsum products (wallboard, lath and sheathing) than inland mills can produce and deliver before January 1, 1944. Consequently, the effective period has been extended to July 1, 1944. O.P.A. also has added the Public Buildings Administration to the list of qualified purchasers which now include War and Navy Departments Maritime Commission and Federal Public Housing Authority.

Talc Production Boom

TALC has been in big demand not only for cosmetics and industrial products but also for gunpowder. In the Goldfield, Nev., area several companies are working at top production, including Southern California Minerals, Blue Star, and Nevada Minerals.

Sell Phosphate Concern

THE DIXIE PHOSPHATE CO., one of several companies producing colloidal phosphate, Tampa, Fla., has been sold to Carl A. Sandell and C. D. Bevis of Philadelphia, Penn. The new company will be called Seaboard Phosphate Co., and the local superintendent is R. R. Knight.

Purchase Mica Mine

MATS E. BERG recently purchased from Stamey Brothers the Martin mica mine five miles northwest of Shelby, N. C. Some very rich nuggets of mica have come from this mine. Mr. Berg formerly operated in Mitchell county but sold out there and bought the Martin property.

Joins W.P.B. Advisory Group

A. N. MORTON, vice-president in charge of production for Mack Manufacturing Corp., New York, N. Y., has been appointed a member of the advisory committee for the automotive, farm and tractor liquid-cooled gasoline engine industry. This announcement was made by the War Production Board, Washington, D. C. Mr. Morton was appointed production chief of the manufacturing interests of Mack Trucks, Inc., in February and became vice-president and director of Mack Manufacturing Corp. this Fall.

Conserving the Life of Multiple V-Belt Drives

AN UNUSUALLY interesting booklet has been prepared by the Engineering Research Bureau of the Multiple V-Belt Drive Association, Chicago, Ill., which should be in the hands of every rock products operating official concerned with the efficient care of machinery drives. As indicated by the title, "23 Ways to Conserve the Life of Your Multiple V-Belt Drives," the booklet gives some very practical suggestions for conserving the life of this equipment with illustrations to show proper methods.

These suggestions in brief are as follows:

1—Underbelting a drive is a wasteful practice; four belts instead of five will result in a reduction in v-belt life of approximately 60 per cent.

2—Don't make the mistake of using pulleys too small in diameter. Sheaves, smaller than recommended size, result in unnecessary v-belt tension and bending, causing overheating and breakdown of the belt structure.

3—V-belt and sheave combinations have different critical speeds at which centrifugal force tends to throw the v-belt away from sheave grooves. Operating a drive with the belt traveling above the recommended f.p.m causes a considerable loss in hp. per belt.

4—The motor should be positioned during installation so that approximately one-fifth of the total available movement is toward the driven unit, permitting easy v-belt application.

5—Don't pry v-belt over sheave rim; roll them on by hand.

6—Have v-belt slack equal.

7—V-belt tension must be uniform. New belts should be taken up after a 48-hour "running-in" period.

8—Sheave and shaft alignment must be correct.

9—Guards for drives should be well ventilated.

10—Sheaves should be firmly keyed on shaft; loose sheaves result in damaging side wear.

11—Don't overload primary v-belt drives.

12—Do not install drive alongside of radiator.

13—Always use matched sets of belts to assure long belt life.

14—Belt dressing should not be used as it is injurious to the belt.

15—Keep oil and grease away from v-belts. An oil-resisting type of belt should be used if this cannot be done.

16—Avoid drag of improperly lubricated bearings; they should be neither under or over-lubricated.

17—Don't use new v-belt with old v-belts.

18—Save discarded v-belts for emergency use.

19—Avoid use of idler to put tension on v-belts.

20—Don't let v-belt rub against stationary objects.

21—Store v-belts in a dry, cool stockroom.

22—Keep v-belt sheaves clean; rust, dirt and dust in sheaves will quickly wear away the protective rubber coating of the belts.

23—Don't operate v-belts in acid fumes or excessive moisture; standard types are not designed for this type of service.

Interested in New Concern

DON MARTIN, president of the Olympia Sand & Gravel Co., Olympia, Wash., has become interested in a newly formed company known as the Castle Rock Lumber Co., Castle Rock, Wash. Plans are being made to erect a planing and re-saw mill of 40,000 b.f. capacity. Mr. Martin is secretary-treasurer of the new company and Sam M. Le Vine of Tacoma is president and general manager.

Explosives Consultant

J. BARAB, chief chemist for Todd & Brown, Inc., operators of The Kingsbury Ordnance Plant, has resigned his position and is now engaged in consulting work as chemical engineer specializing in explosives, with offices at 299 Madison Ave., New York, N. Y. Prior to his connection with Todd & Brown, Inc., Mr. Barab was associated with The Hercules Powder Co. for 21 years.

Soapstone Earnings

ALBERENE STONE CORPORATION OF VIRGINIA, New York, N. Y., had a net income of $2404 for September, 1943, against $2475 for the same month in 1942. Net income for the first nine months of 1943 were $7935 as compared with $24,457 for a like period in 1942. Net sales for the nine-month period in 1943 were $530,592 as compared with $577,449 in 1942.

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Road Forms—7", 8", 9", 10"
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Cement Bins, Weighers, and Elevators
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COMPLETE EQUIPMENT FOR BUILDING CONSTRUCTION

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Air Tools
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Shores
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Welders
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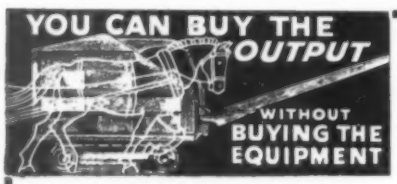

You can hire equipment when you want it and "lay it off" when the job is done, by renting from Equipment Corporation. E. C. A. equipment is REBUILT after every job and is RE-GUARANTEED.

LOCOMOTIVE CRANE

1—15-ton Bucyrus Erie locomotive crane, Serial No. 233, with 40' boom, steam powered. Equipped with air brakes. Thoroughly REBUILT. Cap. at a 12' radius and a 2 part line, 30,000 lbs. Boiler, vertical, size 54"x7'6". Shipping Wt., 87,500 pounds.

AIR COMPRESSORS

Portable and stationary, belt with elec. or gas power, sizes from 25 cu. ft. to 1,000 cu. ft.

BINS

6—Material bins; 1—150-ton Blaw Knox, 1—102-ton Erie 3 comp., 1—60-ton Blaw Knox, 1—51-ton Blaw Knox, 2—30-ton Johnson, 1—25-ton Blaw Knox. All 2 comp. steel bins with weigh batcher.

CRANES AND SHOVELS

1—1¼ yd. Link Belt Model K42 crawler crane, Serial No. 1265, with 40' boom, gasoline powered, and pull shovel attachment.
1—1¼ yd. Erie gas air Model GA2, Serial No. 9758, with 45' boom and shovel attachment.
2—1 yd. Northwest No. 4, Ser. No. 3441, 3493, 60' booms
3—¾ yd. Koehring cranes, Model 301, with 45' boom, Serial Nos. 544, 772, and 846. Gasoline powered.
1—¾ yd. P & H model 400 crawler crane, Serial No. 4136, with 40' boom. Gasoline powered.
1—½ yd. Northwest No. 2, Ser. No. 2908 comb. shovel and crane
1—¼ yd. P & H shovel, Model No. 204, Serial No. 2303, gasoline powered.
1—¾ yd. Erie Model B2 crawler crane, steam powered, Serial No. 4027, with 50' boom and shovel attachment.

CRUSHERS

1—No. 4 Champion jaw crusher, size 9x15", Serial No. 2936.
1—No. 2 Climax jaw crusher, size 9x16"
1—Buchanan jaw crusher, size 10x16"
1—Acme jaw crusher, Serial No. 1873, size 12x20"
1—Acme jaw crusher, Serial No. 1686, size 9x16"
1—United Iron Works, "Blake-type" jaw crusher, size 9½x24"
1—Allis-Chalmers, No. 5 gyratory crusher, Serial No. 5331, opening 10x38"
1—Austin No. 5 gyratory crusher, Serial No. 395, opening 12x35½"

DERRICKS

3—Steel Guy Derricks; 1—20-ton American-Terry 99' mast, 110' boom; 1—5-ton Terry Guy derrick, 70' mast, 60' boom; 1—5-ton Insley, 75' mast, 80' boom; Stiff leg derricks; 1—12-ton derrick 75' boom for hook work; 1—3-ton Pittsburgh 26' boom, 15' mast. Also a number of wood stiff leg derricks, 1 to 5-ton cap.

HOISTS (ELEC., GAS, STEAM)

55—Electric, ranging from 20 H.P. up to 125 H.P., consisting of triple-drum, double-drum and single-drum, with AC or DC motors, some with attached swingers. Following makes: American, Clyde, Lambert, Lidgewood and National.
Gas hoists ranging from 8 to 120 H.P., single, double and triple-drums; all standard makes. (38 in stock.)

PUMPS (Dredging)

1—10" Morris sand pump, Serial No. 86864, cap. 87 cu. yds. per hour
1—8" Cataract dredging pump, Serial No. 175895, cap. 2000 G.P.H. @ 53' head
1—8" Morris cent. sand pump, cap. 60 cu. yds. per hour

SHARPENERS (Bits)

1—Size J3 Ingersoll Rand bit sharpener No. 1626, for rock drill bits, power 3 H.P. G.E. electric motor, 220/440 volt, 60 cyl., 3 ph.
1—Sullivan drill steel sharpener, Class A No. 556, air operated. Max. 1½" round steel

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BUCKETS

1—Blaw Knox 1 yd. 1—Williams ¾ yd.

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1—Jordan Spreader Car, all steel.
6—20 yd. K. & J., all steel, air dump cars, vertical air dump cylinders, air brakes, etc.

CRANE—OVERHEAD

1—8 ton, 4 motor, 36 ft. span, cage control, 220 volt, D.C.

CRUSHING PLANT

1—Complete Stone Crushing Plant, capacity 850 tons per day. Principal items are: 1—Farrel 24x36 Jaw Crusher; 1—Traylor 3', type TY, Reduction Crusher; 1—4x12 triple deck Screen; 1—long 24" Belt Conveyor and 1—short 18" Belt Conveyor; complete with steel bins. Plant can be operated with electric motors, all of which electrical equipment is available or can be operated with two 100 H.P. Diesel Motors and one 50 KW Diesel motor generator set. Plant all set up in working position; perfect condition throughout; immediate delivery.

CONE CRUSHERS

1—Nordberg (Symons) 2 ft. Cone Crusher, coarse bowl.
1—Nordberg (Symons) 5½ ft. Cone Crusher, coarse bowl.

LOCOMOTIVES

1—American 41 ton, 4 wheel, saddle tank, standard gauge, cylinders 14x22, ASME boiler, 190 lbs. working pressure, for sale or rent.
1—80 ton, 6 wheel, Switcher with piston valve, with tender, superheater, code boiler, 200 lbs. pressure, electric lights, Walschaert valve motion, automatic lubrication; thoroughly modern, excellent condition, immediate delivery.
2—68 ton, 6 wheel, Switchers (same as above.)
1—6 ton Whitcomb, 36" gauge, gas.

LOG WASHER

1—Allis Chalmers 25 ft., heavy duty, Hutch type, Log Washer, with steel tank, ⅝" plate, with 2 logs with paddles 35" dia.

JAW CRUSHERS, GYRATORY CRUSHERS, ROLL CRUSHERS, DRYERS AND KILNS, HOISTS, CARS, CRANES, SHOVELS, ETC.

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CRUSHERS

GYRATORY: 42" Gates K, 20" Superior McCully (Like new), 20" Superior McCully, Gates Nos. 13, 10, 9, 8, 7½, 6, 5, 4, 3, 2, 1 (75 avail.) Telsmith Nos. 4, 5, 6 SC, 9 & 16. Also many Austins, Kennedys and Traylors, many sizes.
JAW TYPE: Traylor 60x34, 48x60, 42x48, 34x72. Superior 84x66 & 24x36. Buchanan 30x42. Farrel 60x43, 30x36, 24x36, 18x36, 12x24. Good Roads 1030. Acme 24x40. Misc. 7x12, 9x16, 8x20, 8x34, 12x24, 9x36, 15x36.
REDUC. TYPE: Kennedy Nos. 25, 37 & 49. Telsmith 3-F & 48. Traylor 36" TZ, 8", 10", 12". Super. McCully 6"x10". Newhouse 5, 7 & 10". Symons Cone & Disc Ty. 2' to 4'.
ROLLS: Allis-C. 12½x12, 36x10, 40x15, 54x24 & 72x30. Fairmount 36x60 & Jeffrey 24x24 to 36x54 single roll. Cornish 36x14 & 42x16, Etc., Etc.
HAMMERMILLS: Williams No. 1, 2, 3, 4, 8, & 9. Jeffrey 36x18 & 36x42. Day Nos. 20 & 40, Etc.
MILLS: Kennedy Ball 4x6, 5x6 & 5x8. Marcy 8x6 & 10x9. Hardinge 6'x3', 5'x30' & 6'x9'. Misc. Tube Mills 5' & 6' x 22'. Sturtevant Ring Roll, Raymonds, Kents, Fuller Lehigh, Etc., Etc.
CRUSHING PLANTS: No. 65 Diamond No. 22 Pioneer 8x34, 1030 Good Roads, 9x40 Austin-Western, 9x36 C.R.

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Cast Iron Pipe 8, 10, 12" Bell & Spigot Bucket Elevators

Used Rubber Belting 4" to 32" width

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Northwest Model 104 Dragline, 1¼ yd.
Northwest Model 105 Comb. Shovel & Drag ¾ yd.
Lorain Model 60 Combination Shovel & Drag 1 yd.
Caterpillar D-4 Bulldozer
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Deming pump 6 x 10—3" inlet
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FOR SALE

12 All-Steel two-way Rocker Dump Rock Cars 36" gauge, 80 cu. ft. capacity. Precision bearings. Practically new.

GAGER LIME MFG. CO.
Sherwood, Tenn.

SHOVELS—CRANES

Link Belt K55 Dragline, gas, 2½ yds. cap.
General 7-ton Truck Crane on 6 whl. Mack.
Moore Speedcrane, 15 tons, gas, 65′ bm.
P. & H. Model 600 Shovel, 1-yard cap.
Bucyrus Erie Model 1030 Electric Tunnel Shovel.
Bucyrus Erie 50B Steam Crane, 100′ boom
Buc. Erie 1 yard Steam Crane, excellent.
Bucyrus Erie 50B Steam Shovel, 2 yds.
Buc. Erie Steam Dragline, 6 to 8 yd. bucket.
Marion Model 460 Electric Shovel, 1½ yds.
Northwest Model 104 Shovel-Crane, 1¼ yd.
Northwest Model 105 Shovel-Backhoe 1 yd. Rblt.
Northwest Model 105 Crane, 1 yd. Rebuilt.
Brownhoist 7½ ton Gas Crane.
Ind. Brownhoist 10-ton Cat. Crane, gas.

TRACTORS & MISCELLANEOUS

Caterpillar "30" Diesel Tractor with bulldozer.
Cletrac Model F.G.C. Tractor
Int. TD18 Tractor with bulldozer.
Allis-Chalmers HD7 Diesel Tractor—bulldozer.
Allis-Chalmers L Tractor with Baker bulldozer.
Bucket Elevator, vertical, 40′, 24″ buckets.
I.R. PRE-2 Air Compressor, 1750 CFM, electric.
I.R. two stage, 315 CFM, Portable Compressor.
6—I.R. Wagon Drills.
4—Gardner-Denver Wagon Drills.
6—Spencer Dust Collectors, equal to new.
2—Mack Trucks 6BX, Boulder type, 12 yds.
2—Sterling Trucks 170-C, Boulder type, 12 yds.
1—International Truck, 12 yds., Boulder type.
Butler 16-cu. ft. Asphalt Pug Mill.
2—Steel Stiff-leg Derricks, 10 tons. 100′ bin.
Hardinge Conical Ball Mill, 4½′ x 16″.
Allis-Chalmers Cent. Pump, electric, 3500 GPM.
Worthington 8″ cent. Bronze impeller, elec. port.
Dredge Pump 10″ F.H. cent., nearly new.
Kennedy Van Saun Revolving Screen 4′ x 18′, almost new.

CONCRETE PLANT and EQUIPMENT

Heltzel 85-ton, 3 compt. Steel Bin-batcher.
Rex 288 Mixer on skids, almost new.
Bulk Cement Bin, 350 bbls. Complete.
Blaw-Knox 3 compt. 100-ton Aggregate Bin.
Heltzel 3 compt. Aggregate Bin 100 tons.
B.K. 50-ton, 2 compt. Bin with weigh batcher.
Fuller Kinyon Bulk Cement Unloader, portable.
Fuller C40 Rotary Air Compressor, electric.
Rex Pumperete Model 200 with 750′ pipe.
Rex Pumperete Model 190 with pipe.
Rex Pumperete Model 180 with 500′ pipe.
Ransome 27E Dual Paver with boom and bucket.

CRUSHERS—CRUSHER PLANTS

Telsmith 20-B steel frame Gyratory, V-belt drive.
Gyratory Crusher: K.V.S. 36, 37-S, 49; 32, 8A, 8B; Traylor 8″; McCully 13″, 8″ 6″
Allis-Chalmers Anaconda Type, 54″x24″.
Jaw: 6x12, 9x16, 10x20, 14x24, 12x26, 13x30, 16x32, 56x84.
Complete Rock Crushing Sand & Gravel Plants.

BUCKETS—STONE SKIPS

Blaw-Knox ⅞ yd. Clam, digging.
Hayward ⅞ yd. Clam, digging.
⅝-yd. Williams Clamshell, digging.
2—½-yd. Haiss rehandling, Clamshell.
⅝-yd. Haiss Clamshell, rehandling.
Erie ⅝-yd. Clamshell, rehandling.
Owen Stone Grapple.
Hayward ⅝-yd. Standard Orange Peel.

LOCOMOTIVES—CARS

American 60-ton, steam, std. ga.
American 50-ton, steam, Saddle Tank.
American 45-ton, steam, Saddle tank.
Vulcan 20 ton, standard gauge, gas.
Vulcan 8-ton, std. gauge, gas.
Vulcan 6-ton, gas, 36″ gauge.
Porter 12 ton Saddle Tank, Steam 36″ ga.
10—Phoenix 5 yd. heavy duty, 36″ ga. Quarry Dump Cars.
21—Koppel, 4 yd., 36″ gauge Dump Cars.
6—40-ton Standard Gauge Flat Cars.

RICHARD P. WALSH CO.
30 CHURCH STREET NEW YORK

ROTARY DRYERS AND KILNS

1—Kiln 7′-0″ dia. x 120′ long
1—Kiln 8′-0″ dia. x 5′-6″ x 80′ long.
1—Kiln 7′-6″ dia. x 125′ long
1—Dryer 70″ dia. x 45′ double shell
1—Steam Dryer 6′-0″ x 50′ long
1—Double Shell Dryer 5′-0″ x 30′
1—Dryer 5′-6″ x 5′-0″ x 60′-0″
1—Dryer 6′-0″ x 64′ long
1—Cummers Dryer 4′-6″ x 30′
1—Dryer 4′-6″ x 20′-0″
1—Dryer 4′-0″ x 21′-0″
1—Dryer 3′-6″ x 25′-0″

Also crushers of smaller sizes

McDERMOTT BROS. CO.
ALLENTOWN, PENNA.

FOR IMMEDIATE DELIVERY OF RUBBER PRODUCTS

Conveyor Belting...Transmission Belting...Elevator Belting...Fire, Water, Air, Steam, Suction or Welding Hose, etc.

CALL, WIRE or WRITE
CARLYLE
THE RUBBER HEADQUARTERS

CARLYLE RUBBER PRODUCTS ARE NEW, GUARANTEED & LOW PRICED

CONVEYOR BELTING

ABRASIVE RESISTANT COVERS

Width	Ply	Top-Bottom	Covers
48″	8	1/8″	1/16″
42″	5	1/8″	1/16″
36″	6	1/8″	1/16″
30″	6	1/8″	1/16″
30″	5	1/8″	1/16″
24″	5	1/8″	1/32″
24″	4	1/8″	1/32″
20″	5	1/8″	1/32″
20″	4	1/8″	1/32″
18″	4	1/8″	1/32″
16″	4	1/8″	1/32″
14″	4	1/16″	1/32″
12″	4	1/16″	1/32″

Inquire For Prices - Mention Size and Lengths

TRANSMISSION BELTING

HEAVY-DUTY FRICTION SURFACE

Width	Ply	Width	Ply	Width	Ply
18″	6	10″	6	6″	5
16″	6	10″	5	5″	5
14″	6	8″	6	4″	5
12″	6	8″	5	4″	4
12″	5	6″	6	3″	4

Inquire For Prices - Mention Size and Lengths

ENDLESS "V" BELTS

"A" WIDTH All Sizes | "D" WIDTH All Sizes
"B" WIDTH All Sizes | "E" WIDTH All Sizes
"C" WIDTH All Sizes | Sold in Matched Sets

Inquire For Prices - Mention Size and Lengths

PROTECT THAT PLANT

FIRE HOSE

APPROVED SPECIFICATION HOSE
EACH LENGTH WITH COUPLINGS ATTACHED

Size	Length	Per Length
2½″	50 feet	$28.00
	25 "	16.00
2″	50 "	23.00
	25 "	13.00
1½″	50 "	20.00
	25 "	11.00

Specify Thread On Couplings

SPECIAL OFFER . . . HEAVY DUTY

RUBBER HOSE

WATER HOSE

I.D. Size	Each Length with Couplings Attached Length	Per Length
¾″	25 feet	$4.25
1″	50 "	8.00
	25 "	6.25
1¼″	50 "	12.00
	25 "	7.50
	35 "	10.50
	40 "	12.00
1½″	50 "	15.00
	25 "	10.00
	35 "	14.00
	50 "	20.00

AIR HOSE

I.D. Size	Length	Per Length	Couplings
½″	25 feet	$5.00	$1.50 Pair
	50 "	10.00	1.50 "
¾″	25 "	6.25	2.50 "
1″	50 "	12.50	2.50 "
	25 "	10.00	3.50 "
	50 "	20.00	3.50 "

LARGER SIZES ALSO AVAILABLE
All Prices—Net—F.O.B. New York

CARLYLE RUBBER CO., INC.
62-66 PARK PLACE NEW YORK, N. Y.

Transport Truck Mixers
Factory Reconditioned
1¼ Cu. Yd.
Less Than Half Original Price

CONCRETE TRANSPORT MIXER CO.
630 Rosedale Avenue St. Louis, Mo.

BRICK PRESS FOR SALE

Jackson & Church Rotary Brick Press. Complete with motor and few extra parts. For further information write

WINCHESTER BRICK CO.
East St., Winchester, Mass.

TRY A CLASSIFIED AD — IT PAYS

This Mammoth Mill Is Ready to Ship

ALLIS-CHALMERS COMPEB MILL

1—#8745 Allis Chalmers Dry Grinding Compeb Mill, 45' long. This is a four compartment mill with the first compartment 10' long and 8' in diameter. The other compartments taper to 7'. The mill has chilled iron liners, and 36" table feeder, 72" Cutler Hammer Magnetic Clutch, and 3 compartment Dust Collector.

New SPARE PARTS available for most items

MILLS

1—Williams mill, size 3.
3—No. 8 Krupp steel ball mills, spur geared, with counter shaft.
1—Allis Chalmers Compeb Mill, complete, gear driven from counter shaft through magnetic clutch, and with induced fan ventilation and dust collectors.
12—30" Griffen Mills.
1—5x20 Smidth steel ball mill.
22—42" Fuller Lehigh pulverizers, each with belt idler.
2—33" Fuller Lehigh pulverizers, each with belt idler.

CRUSHERS

1—Allis Chalmers Fairmont Roll Crusher 36"x60".
1—No. 6 Gates gyratory rock crusher.
1—No. 6 McCully gyratory rock crusher, style K.
3—No. 5 Gates gyratory crushers.
1—Mosser rotary clinker crusher.
1—No. 10 McCully gyratory rock crusher with extra gear, eccentric and bell.

KILNS

2—Vulcan Iron Works steel rotary kilns, 8'6"x7'6" dia., 125' long, fire brick lined.
1—Vulcan Iron Works steel rotary kiln, 7'x8"x7' dia., 175' long, fire brick lined.
5—W. F. Mosser & Son steel rotary kilns, 5'6"x5' dia., 60' long, fire brick lined.

DRYERS

2—W. F. Mosser & Son steel rotary dryers with 65" steel stack.
2—W. F. Mosser & Son steel rotary dryers, 72"x60" dia., 60' long, bevel gear drive, each with counter shaft and 40' steel stack.
1—W. F. Mosser & Son steel rotary dryer, 72"x60" dia., 55' long, bevel gear drive, with counter shaft and 35' steel stack.
1—W. F. Mosser & Son steel rotary dryer, 72"x60" dia., 55' long, bevel gear drive, with counter shaft and 50' steel stack.
1—Ruggles 5'x30' Dotary Dryer.

CONVEYORS

RUBBER BELT

14" — 16" — 18" — 20" — 24" and 28" Centers varying from 30' to 203'. Some with movable Trippers.

STEEL SCREW

6" — 7½" — 8" — 10" — 12" — 14" — 16" — 18" and 20" in Steel Box. Over 10,000 ft. all lengths.

BUCKET ELEVATORS

Thousands of feet of bucket elevators, all sizes of buckets, mostly all steel encased.

BUCKET SIZES: 10 x 18—10 x 15—9 x 14—9 x 13—9 x 12—8 x 16—8 x 15—8 x 14—8 x 13—8 x 12—7 x 12—7 x 11—7 x 10—6 x 10—6 x 9—6 x 7

With—844; 103; 132 chain from 12' to 60' heights.

NEW BUCKETS and GEARS

HEAT and POWER Company, Inc.
45 BOND STREET ALgonquin 4-3874 NEW YORK 12, N. Y.

FOR SALE

LARGE STOCK USED STEEL PLATES, STRUCTURAL SHAPES, and reconditioned steel pipe. No priority required. Immediate delivery. Inquiries invited.

MARYLAND PIPE & METALS COMPANY
304 W. Church St. Hagerstown, Md.

RAILS AND ACCESSORIES

RELAYING RAILS—Super-quality machine-reconditioned—not ordinary Relayers.
NEW RAILS, Angle and Splice Bars, Bolts, Nuts, Frogs, Switches, Tie Plates, all other Accessories. Although our tonnages are not as large as heretofore, most sizes usually available. Every effort made to take care of emergency requirements.

PHONE, WRITE OR WIRE
L. B. FOSTER COMPANY, Inc.
PITTSBURGH NEW YORK CHICAGO

FOR SALE

3' x 10' Diamond Triple Deck Vibrating Screen in very good condition. Immediate shipment.

15¾" x 48" Steel Cased Elevator, centrifugal discharge with 7 x 12" buckets on No. 82 chain, 70 foot centers.

G. & W. H. CORSON, INC.
Plymouth Meeting, Pa.

ELECTRICAL MACHINERY

Motors and Generators, A.C. and D.C., for sale at Attractive Prices. Large Stock. New and Rebuilt. All fully guaranteed. Send us your Inquiries.

V. M. NUSSBAUM & CO.
FORT WAYNE, IND.

FOR SALE

1—I-R Drill Sharpener for 1" hex steel....$350
2—Telsmith 2SS tilting Cement Mixers..ea. $500
Overhead Carrier System: handles 5T skips about 800' horizontally, any depth; complete with 94' steel mast, automatic carrier, hi-speed hoist, motor, etc.; where is.....$1500

SWANTON LIME WORKS, INC.
Swanton, Vermont

FOR SALE

1—Williams No. 6 Jumbo Hammermill.

McDermott Bros. Co.
Allentown, Penn.

FOR SALE OR TRADE

1 Yd. P & H 450 Gas Shovel or Crane. Rebuilt.
2 RD8 Cat. Diesel Tractors and 12 yd. Scrapers.
International TD40 Tractor and 5 yd. Scoop.
Cat. 65 Diesel Tractor with Euclid Bulldozer.
1500 ft. Sullivan Motor Driven Air Compressor.
75 to 500 HP Diesel Units—various types.
870 HP, 3-unit Diesel Generating Plant.

Mississippi Valley Equipment Co.
515 Locust Street St. Louis 1, Mo.

FOR SALE

1—90-ft. Insley mast with guy lines, cables
1—1-in. trolley cable
400 ft. long—1—1¼-in. trolley
600 ft. long, and a Sauerman Bros. ½-yd. bucket. Capacity of 1½ to 2-yd. bucket.

WALTER BEISSER
Route 6, Zanesville, Ohio

FOR SALE

600 full 12-inch cast iron pallets to fit Stearn machine
1—9 ft. Blystone batch mixer
1—Miles Tamper all new chains, sprockets and bearings

BATTLE CREEK CONCRETE PRODUCTS CO.
Reese Road Battle Creek, Mich.

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4 OFFICES and PLANTS

CHICAGO 1133 S. Wabash Ave.
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EQUIPMENT CORPORATION of AMERICA

WE SERVE 4 WAYS
BUY | REBUILD
SELL | RENT

4

LIQUIDATIONS!

JUDGE CONCENTRATOR

Park City, Utah

Main items consisting of:

No. 64½ Marcy Ball Mills; Allis Chalmers Crushing Rolls 36" x 15", 28" x 15"; Blake Jaw Crushers 10" x 20", 9" x 15"; Erie City 150 HP Scotch Marine Boiler, 150# pressure; B & W 115 HP Sterling Boiler; Oliver and American Continuous Filters; Dorr Thickeners; Callow Cone Dewatering Tanks 8' x 8'; Trommel Screens; Wilfley Tables; Air Compressors; Pumps; Bucket Elevators; Drag Belt Conveyors; Speed Reducers; Tanks; 20 Tons of Forged Steel Balls; Pipe, 1" to 8"; Shafting; Pulleys; Lumber; Timber; Sheeting; over 500 HP of Motors 5 to 100 HP 3/60/440 with starters.

PULASKI LUMBER CO.

PULASKI, PA.

(6 miles from Youngstown, Ohio)

Complete plant consisting of:

Raymond 4 Roll High Side Roller Mill, complete with piping, fan, dust collectors, 2 40 HP motors with chain drive all in excellent condition; 3 Barrel and Bag Packers; Bucket Elevators; Roll Crusher; 3' x 15' Rotary Dryer; Motors; Land and Buildings, etc.

Complete details on request.

Everything priced for quick sale.

Your inquiries solicited.

WIRE! PHONE! WRITE!

Specials at Other Locations

1—Vulcan Rotary Dryer, 6' x 42'
5—Bucket Elevators, 25' to 45' centers
5—Tyler Hummer Screens, 3' x 5', 4' x 5'
1—Jeffrey Type "A" Hammer Mill, 36" x 24"
2—Rotary Kilns, 7' x 120', 8' x 70'
4—Rotary Dryers, 4'x30' to 6'x64'

Partial List Only.

BRILL EQUIPMENT COMPANY
183 VARICK STREET
NEW YORK 14, N. Y.

SHOVELS, CRANES, DRAGLINES

1—SHOVEL, Marion Model 340, Serial No. 6643, 1 cu. yd. capacity, powered by gasoline engine, equipped with electric starter. Price **$13,500.00**

TRACTORS, SCRAPERS AND DOZERS

1—TRACTOR AND SCRAPER, Model 50 "Caterpillar" Diesel and Le Tourneau Model J6 Scraper, 6 cu. yd. capacity, equipped with 6-9.75 x 20 Tires and Double Drum Power Control Unit.... **$5,594.00**
1—TRACTOR, Allis-Chalmers, Model L, equipped with front push bumper and electric starter. Price **$3,031.50**
Can furnish Bake Hydraulic Bulldozer for the above Tractor. Price..... **$1,182.50**

HAULING EQUIPMENT

2—DUMPTORS, Koehring Model WD-60, 6 cu. yd. Diesel powered, pneumatic tired. ..... **FOR RENT ONLY**
1—TRUCK, Mack Heavy Duty Model AC, Chain Drive, No Body, equipped with 9.75 x 24 Dual Rear Tires, 9.00 x 20 Front Tires, powered by 4 cylinder gasoline engines. Tires A-1.

COMPRESSOR, CRUSHER AND DRILLS

1—COMPRESSOR, Portable, Gardner Denver, 315 cu. ft. on 4 steel wheels, powered by "Caterpillar" Diesel engine. Price **$5,206.00**
1—COMPRESSOR, portable Schramm 315', late model, powered by International Diesel engine on four wheels.... **FOR RENT ONLY**
1—COMPRESSOR, stationary, Sullivan, angle compound. Model WJ-3, 348 cu. ft. acutal air, equipped for flat belt drive. Price **$1,333.00**
4—WAGON DRILLS, Cleveland Model DR8, mounted on pneumatic tires. Rebuilt. ..... **FOR RENT ONLY**
1—WAGON DRILL, Ingersoll-Rand, Model MDL, equipped with Model X71 Drifter, new in 1942. Price..... **$1,180.00**
1—VIBRATING SCREEN, Seco Type M, double deck, 4' x 16'. Can furnish screen sections to suit your needs. Price.. **$1,995.00**
1—PULVERIZER, Gruendler Model 2XA, used less than three months. Price **$650.00**
1—JAW CRUSHER, Model 10 x 40 Good Roads, Roller Bearing, late model. Price **$2,490.00**
1—COMPRESSOR, Worthington 315 cu. ft. capacity, powered by "Caterpillar" Model D13000 Diesel engine, mounted on 4 steel wheels ..... **FOR RENT ONLY**
1—COMPRESSOR, Schramm Model 160, powered by gasoline engine 160' capacity, on 4 steel wheels. **FOR RENT ONLY OR RENTAL WITH OPTION TO PURCHASE**
1—BALL MILL PULVERIZER, Kent Maxecon, Type 7. Price..... **$2,750.00**
1—DRILL STEEL, all sizes and lengths threaded for Timken Bits. Just received carload.
1—AIR HOSE, ¾" and 1", with or without couplings.

ROLLERS AND ROOTERS

1—ROLLER, Austin, 10-ton, three-wheel. Price **$2,395.00**

PAVING EQUIPMENT

1—PAVER, 27E, Koehring, complete with bucket, boom, and water tanks. Price **$1,500.00**

PUMPS

1—CENTRIFUGAL PUMP, Rex 4", 4 cyl. radiator-cooled gasoline engine, on two steel wheels. Price..... **$395.00**
2—CENTRIFUGAL PUMPS, Jaeger, 4XP, 4-cylinder air-cooled gasoline engine, 30,000 GPH, on 2 steel wheels..... **FOR SALE OR RENT WITH OPTION**..... **$430.00**
1—CENTRIFUGAL PUMP, Jaeger 4P, 4-cyl. radiator-cooled gasoline engine, 40,000 GPH, on 2 steel wheels..... **FOR SALE OR RENT WITH OPTION**..... **$610.00**

MISCELLANEOUS EQUIPMENT

1—NEW POWER UNIT, Allis-Chalmers Model L90, 6-cylinder gasoline, 100HP at 1,050 RPM, radiator-cooled, equipped with enclosed type clutch, hood and dash fuel tank, all on steel channel base. Price **$1,675.00**
1—ELECTRIC HOIST, Thomas Single Drum High Speed, Model 52, powered by 20 HP, 3 phase, 60 cycle, 220 volt electric motor with Bulldog switch and controller; lifting capacity 565 lbs. at 935 ft. per minute. By changing Drive Sheave lift capacity and speed can be increased or decreased.
1—NEW ENGINE, International Model UD6 Diesel, 4 cylinder. Radiator to Flywheel 31 HP at 1500 RPM.

ROY-C-WHAYNE
SUPPLY COMPANY

800 West Main Street, Phone Wabash 1375
LOUISVILLE 2, KENTUCKY

PULVERIZERS

One (1)—Sturtevant Vertical Emery Mill, new emery stones recently. Price $675.00
Four (4)—Kent Maxecon Ring Roll Mills, in good running condition, may be seen in operation. Price, each, $1675.00
One (1)—Bradley 3 Roll Pulverizer. Price $1150.00

WHITEROCK QUARRIES
Bellefonte, Penna.

HYDRATORS

3 Kritzer & Schulitess Hydrators.

AIR COMPRESSORS

BELTED: 355, 528, 676, 1000, 1380 & 1570 Ft.
ELECTRIC: 473, 676, 807, 1362, 1723 & 2200 Ft.
DIESEL: 603, 807 & 1000 Ft.
PORTABLE GAS: 110, 160, 320,310,540 & 1300 Ft.
STEAM: 42, 310, 523, 1300, 2200 & 3600 Ft.

CLAMSHELL BUCKETS, SKIPS & GRAPPLES

Owen R A & H Stone Grapples.
2 Yd. OWEN Type S Material Handling.
1½ Yd., 1 Yd. & ¾ Yd. HAYWARD Class E.
18 Steel Skips 6¾ x 6 x 2½.
5 Ton Bucyrus Rock Grabs.

CRANES AND DRAGLINES

⅜ Yd. 5 Ton O & S 30 Ft. Boom.
12 Ton NORTHWEST 50 Ft. Boom Gas.
20 Ton LIMA, 750 Diesel, 65 Ft. Boom.
25 Ton BROWNING & 30 Ton AMERICAN Locc.
25 Ton LINK BELT K-48 Electric, 70 Ft. Boom.

CATERPILLAR SHOVELS

¾ Ld. Lima Diesel.
2 Yd. Marion Steam Shovel.
⅜ Yd., 1¼ Yd., 2 Yd. & 4 Yd. MARION Electrics.
1 Yd. NORTHWEST Gas.
1½ Yd. LIMA Diesel.
1½ Yd. BUCYRUS 41B Steamer.
4 Yd. Bucyrus 120 B Electric. Also 3 yd. Erie Elec.

DUMP CARS

46—KOPPEL 1¼ Yd. 24 & 30 In. Ga., V Shaped.
15—2 Yd. 3 Yd., 4 Yd., 6 Yd., 12 Yd., 36 In. Ga.
20—Std. Ga. 12 Yd., 16 Yd., 20 Yd. & 30 Yd. Cap.
15—Std. Ga. 50 Ton Battleship Gondolas.

FLAT CARS

9—50 ton std. ga. heavy duty flat cars.

HOISTING ENGINES

Gas: 15, 30, 60, 100 & 120 HP.
Electric: 30, 52, 80, 100 & 150 HP.
Steam: 6¼x8, 7x10, 8¼x10, 10x12, 12x14.

DIESEL UNITS

75, 90, 180, 200 HP. F. M. Engines.
110 HP Ingersol Rand Engine.
175 KVA Worthington 3/60/2300.
275 KVA Fairbanks 3/60/2300.

BALL, ROD AND TUBE MILLS

6x8 Pebble Mill & 5x5 Batch Mill.
5'x22" HARDINGE CON. Dry Ball Mill.
6'x22" HARDINGE CONICAL Pebble Mill.
8'x22" HARDINGE CONICAL Ball or Pebble Mill.
4x8, 8x6 & 10x8 Straight Ball Mills.
4x16, 5x18 & 5x22 Tube Mills & 6'x22'.
3½x8 & 5x7 Air Swept Tube Mills.
2x14½, 6x12 & 5x12 ROD MILLS.

PULVERIZERS

JEFFERY, 24x20 & No. 1 Sturtevant Ring Roll.
RAYMOND Auto Pulverizer No. 0000, 0 & 3.
RAYMOND Imp. Mills, No. 4, 32 & 55.
GRUENDLER XXB Mill & Jay Bee No. 3 & 4.
RAYMOND 4 & 5 ROLL MILLS & 5 ft. Chaser M.

STEEL STORAGE TANKS

10,000 Gal., 15,000 Gal. & 20,000 Gal. Cap.

MATERIAL BIN

116 Ton Blaw Knox 2 Compt.

400 BARREL CEMENT BIN

400 Barrel Butler Portable Steel Cement Bin with Fuller automatic batcher, push button control.

SEPARATORS AND COLLECTORS

8, 10 and 14 ft. Separators, Gayco & Bradley.

ROLL CRUSHERS

36x60 Fairmount & 36x20 Diamond.

JAW CRUSHERS

10x8, 13x7½, 14x7, 15x9, 15x10, 16x9, 16x13, 16x10, 18x11, 20x8, 20x6, 20x10, 20x12, 26x12, 30x15, 30x13, 36x15, 36x20, 36x18, 36x14, 36x9, 36x6, 36x10, 36x24, 42x9, 48x24, 48x36, 60x42, 84x60, 36x16, 9x36.

CONE & GYRATORY CRUSHERS

42 in. McCully Mammoth Gyratory.
5 No. 19, 25, 37 & 49 Kennedy.
18 in., 24 in., 30 in., 36 in. & 48 in. Symons Disc.
4—10 TZ Traylor 4 ft. Gyratory.
4—Nos. 5, 2 & 6 Austin Gyratory.
2—Traylor T-12 Bulldog Gyratory, also 16 Inch & 36 in. Traylor T. Gyratory.
17 Gates K—Nos. 3, 4, 5, 6, 7½, 8 & 9½.
10 Inch Austin Model 105.
6, 10 & 13 Inch Superior McCullys.

SYNCHRONOUS MOTOR GENERATORS

100 K.W. RIDGWAY 3/60/2200-250-275 volt.
150 K.W. GEN. ELEC. 3/60/2200-250-275 v.
200 K.W. RIDGWAY 3/60/2300-250-275v.,900 rpm.

SLIP RING MOTORS

52 HP. GEN. ELEC. 3/60/440 v., 1200 rpm.
(3) 100 HP. GEN. ELEC. 3/60/440v.,900-1200rpm.

CONVEYOR PARTS

BELT: 1000 Ft.60 In., 700 Ft.40 In., 600 Ft.36 In., 300 Ft.30 In., 1642 Ft.24 in., 517 Ft.20 In., 297 Ft.18 In., 500 Ft.16 In., 300 Ft.14 In.
IDLERS: 54 In., 42 In., 36 In., 30 In., 24 In., 20 In., 18 In., 16 In. & 14 In.
Head & Tail—Pulleys—Takeup for all sizes.
Steel Frames: 2,000 Ft.24 In.,30 In.&36 In.Sections.

ROTARY DRYERS AND KILNS

36 In.x20 Ft., 3 Ft.x30 Ft., 4 Ft.x30 Ft., 54 In. x30 Ft., 42 In.x34 Ft., 5 Ft.x30 Ft., 5 Ft.x16 Ft., 5 Ft.x60 Ft., 6 Ft.x60 Ft., 6 Ft.x20 Ft., 6 Ft.x70 Ft., 10x20, 7½x100&8x110 Ft. Kilns.

STEEL DERRICKS

GUY: 3 Ton 85 Ft. Boom, 15 Ton 100 Ft. Boom, 20 Ton 115 Ft. Boom, 50 Ton 100 Ft. Boom.
STIFF LEG: 5 Ton 70 Ft. Boom, 15 Ton 100 Ft. Boom,25 Ton 100 Ft. Boom,75 Ton 135 Ft.Boom.

LOCOMOTIVES

GASOLINE: 3 Ton,5 Ton, 8 Ton, 12,14, and 20 Ton.
STEAM: 9 Ton, 20 Ton, 40 Ton, 60 Ton & 80 Ton.
ELECTRIC: 2 Ton, 5 Ton, 8 Ton, 40 Ton.
DIESEL: 4, 8 & 15 Ton.

SCREENS

VIBRATING: 2x4, 3x6, 12x8, 3x8, 3x5, 4x8, 4x3, 4x10, 48x72 & 4x12. 1, 2 & 3 Deck.
HUMMER ROTEX, NIAGARA & ROBINS.
REVOLVING: 3x13, 3x16, 3½x18, 3x24, 4x16, 4x30, 4x33, 4x24, 5x30, 5x20, 6x30.

R. C. STANHOPE, INC.

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60 East 42nd Street
New York, N. Y.

MISCELLANEOUS

Davenport standard gauge 10-ton locomotive
Whitcomb 36" gauge 8-ton locomotive
Mercury 1½-ton 39" gauge Edison battery loco.
Sprague Electric car puller, 6-ton, D.C.
Two elec. car pullers with AC motors, 10 & 5-ton
Two yard 36" gauge V shape end dump car
Flat cars for 18" and 24" gauge
Morris sand pump, 6", direct to 75 hp motor
Electric & Gasoline driven water pumps
Magnetic Pulleys: 12" x 14" and 15" x 20"

CRUSHERS, ROLLS, MILLS

Jaw crushers—9" x 16", two 11" x 20", 18" x 32"
Traylor 11" "BULLDOG" gyratory crusher on wheels
Robins double roll crusher, 24" x 30"
Stevenson single roll crusher, 24" x 39"
Single roll crusher, 24" x 24" with knobs
Simplex Coal Pulverizer, type 33A
American Standard disintegrator, 24" x 18" x 30"
Sturtevant No. 0 Rotary Fine crusher
Williams No. 2 "SEMI-VULCANITE" hammer mill
Williams No. 2 "REGULAR" hammer mill

SCREENS AND WASHERS

Two Niagara double deck, 2' x 10' vibrating screens
Universal double deck, 42" x 8' vibrating screen
"JIGGER" triple deck, 2' x 5' vibrating screen
Hummer vibrating screens, 1 and 2 deck, 3' x 5' and 4' x 5'
Tyler generators for "HUMMER" screens
100 new "TONCAN" framed screens, 3' x 5' and 4' x 5'
Revolving screens, 3' x 8', 42" x 18', 5' x 20'
Sand drag washer, 36" x 20'

BUCKET ELEVATORS

55' continuous elevator, 14" buckets on belt
35' continuous elevator, 30" buckets, 2 strand chain
35' enclosed belt elevator with 6" buckets
50' centrifugal elevator, 16" buckets on chain
40' centrifugal elevator, 18" malleable buckets
53' centrifugal elevator, new 20" buckets on 9-ply belt
1000' of 6-ply used 20" elevator belt
Gears, sprockets, elevating and driving chain
New K2 and couplings for C102½ and C188 chain

CONVEYORS

Three 14" x 100' Robins trough belt conveyors
36" x 175' trough belt conveyor
Belt idlers and conveyor pulleys
600' of 6-ply 14" belt with ¼" cover
800' of 26" 6-ply belt with ¼" cover
185' of 42" 8-ply belt with ⅛" cover
Slightly used 24" and 20" conveyor belt
12" and 15" single strand flight conveyors
Robins Automatic belt trippers for 14" belt
Hand propelled trippers for 24" belt
Steel conveyor, 47" x 100' flat surface
Jeffrey Foundry Mold conveyor, 42" x 150'
Jeffrey Standard Steel Apron Feeder, 24" x 60'

G. A. UNVERZAGT & SONS

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20 ton Ohio Loco-Crane, 50 ft. Boom.
Hayward 2 yd. Orange-Peel Bucket.
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¾ Yd. Model 400 P & H Shovel.
1 Yd. Link Belt K-30 Shovel.
1 Yd. Northwest 105 Shovel-Crane.
10 ton Buf-Spr. Roller, Gas, 3 Wh.
8 ton Buf-Spr. Roller, Gas, 3 Wh.
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Gardner-Denver Loader, Model GD-9.
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McK-T. Pile Hammers, 3, 5, 6, 7.
LaBour self-pr. Pumps, 4".
Thor and Ing-Rand Air Pumps.
Gard-D. Compressor, 630' A. A. E. Dr.
2—Ing-Rand 110' Compressors.
22—Busters, Spades, Jackhammers, Sheeting Hammers.
1 Yd. Round Shaft Buckets.
1 Yd. and ½ Yd. Dump Buckets.
Pullshovel and Skimmer Attach. for ½ Yd. P & H.
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Shovel Attachment for 41-B Bucy-Erie.

J. T. WALSH

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300 CFM Chi. Pneu. with 75 H. P. motor.
526 CFM Ingersoll-Rand, Style "JC."
599 CFM Ingersoll-Rand Type 10XB horiz. 2-st., 100 lb. W. P., 150 H. P. 3/60/440 V motor and starter, etc.
888 CFM Ingersoll-Rand Type 10XB horiz. 2-st., 100 lb. W. P., 75 H. P. 3/60/440 V motor and starter, etc.
940 CFM Ingersoll-Rand 10 horiz. 2-st. steam driven with receiver.

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24" x 54" Superior Crushing Rolls.
No. 3 McCully Gyratory.
No. 6 McCully Gyratory.

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8—American Hoist & Derrick Co., double drum, motor driven with 40 H. P. A. C. motors.

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150 H. P. Allis Chalmers, 695 R. P. M., complete with controller, etc.

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"ANYTHING containing IRON or STEEL"

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1—82 ton Porter 0-6-0 separate tender switcher, 22" x 26" cylinders, National Board and A.S.M.E. boiler, I. C. C. papers.

1—71 ton Baldwin 0-6-0 saddle tank switcher, A.S.M.E., Pennsylvania and Ohio code, built 1930, overhauled with entire new firebox.

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1—33 ton Vulcan 4-wheel saddle tank, standard gauge, A.S.M.E. boiler, new firebox in 1942, first class condition.

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2—13x30 Farrel Jaw Crushers.
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80'x18" Belt Conveyor complete with frame and belt.
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14"—16"—18"—20"—24"—30"
All Types—Complete with Drives

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100 HP. Fairbanks VA Diesel Engine.
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Approx. 2,000 NEW 18½"x26" plain steel pallets for Besser machine.

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TO RENT

1½ to 2½ Yard

DIESEL SHOVEL

Must be in good serviceable condition.

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WANTED: 42" or 48" x 10' or 12' Symons Double Deck Vib. Screen. One log washer with double logs paddle type 14' or 16' long. Please state price, condition, size, make, and where same can be inspected.

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Battle Creek, Michigan

WANTED

3 yard Diesel Dragline 30 to 100' boom
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Bulldozer
3—10-ton dump trucks

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Pallets—5000 7⅝" x 11⅝" two core
5000 3⅝" x 15⅝" three core
Pressed steel preferred, send paper templet and prices.

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MINERAL COLORS
for
CEMENT-PLASTER-STUCCO CONCRETE PRODUCTS
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HENRY, VIRGINIA

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CORE DRILLING
ANYWHERE
We look into the earth
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W. R. BENDY
Cement Engineer
CLAVERACK, N. Y.
Business suspended for the duration.

POSITIONS VACANT

WANTED — Experienced cement plant chemist and analyst for Pacific Coast plant. State educational background, draft status and references. Write Box No. B-37, Rock Products, 309 W. Jackson Blvd., Chicago, Illinois.

WANTED—Quarry Superintendent for a small granite quarry in the Northwest, producing poultry grit. Annual Salary. Quarry operated by old established firm. Box B-38.

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CEMENT ENGINEER
Design — Construction — Operation
20 Years' Experience
Wishes new connections anywhere
Highly recommended
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to insure continuous service

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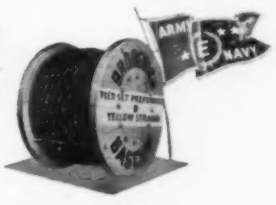

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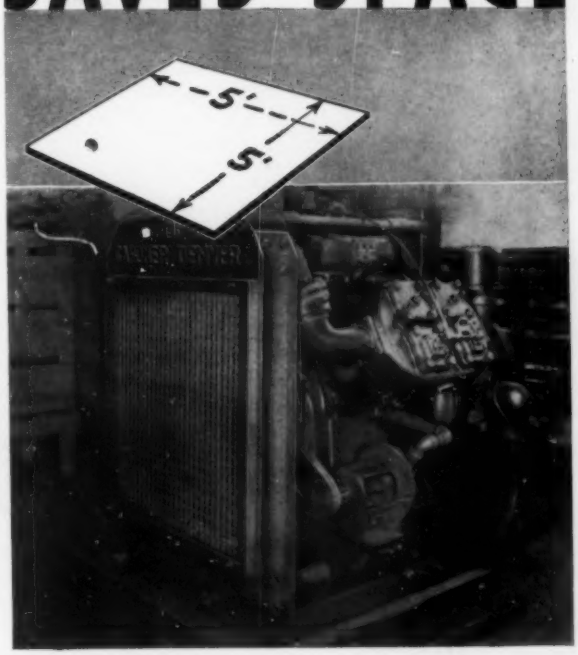

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L-P

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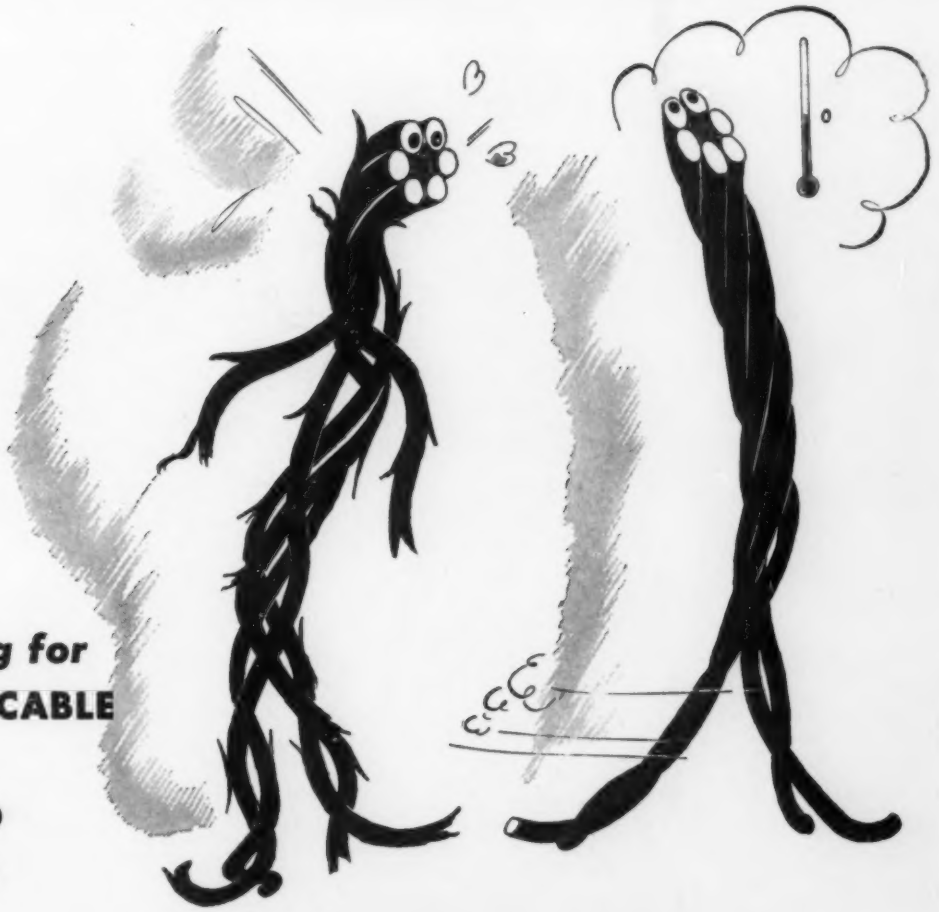
SIMSBURY, CONNECTICUT

Primacord-Bickford
Detonating Fuse



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AMERICAN CABLE DIVISION

Wilkes-Barre, Pa., Atlanta, Chicago, Denver, Detroit, Houston, Los Angeles, New York, Philadelphia, Pittsburgh, San Francisco, Portland, Tacoma

AMERICAN CHAIN & CABLE COMPANY, INC.

BRIDGEPORT, CONNECTICUT

ESSENTIAL PRODUCTS... TRU-LAY Aircraft, Automotive, and Industrial Controls, TRU-LOC Aircraft Terminals, AMERICAN CABLE Wire Rope, TRU-STOP Brakes, AMERICAN Chain, WEED Tire Chains, ACCO Malleable Castings, CAMPBELL Cutting Machines, FORD Hoists, Trolleys, HAZARD Wire Rope, Yacht Rigging, MANLEY Auto Service Equipment, OWEN Springs, PAGE Fence, Shaped Wire, Welding Wire, READING-PRATT & CADY Valves, READING Electric Steel Castings, WRIGHT Hoists, Cranes, Presses... *In Business for Your Safety*

USE YOUR SHOVEL'S "Second Wind" TO GET GREATER YARDAGE

Tap that reserve capacity of your excavator. Every extra yard that can be produced beyond normal expectation is an added contribution to victory on the production front.

Good planning and job organization of course are "musts." So is proper maintenance of your equipment. And, equally important, an experienced operator through skillful handling of his machine can save a minute here and a minute there which add up to a substantial yardage bonus at the end of the shift.

Perhaps these suggestions may help you to speed up your shovel's output:

- Heap the dipper. Get a full load every pass. Heap every truck but don't overload.
- Take a thin slice at a cut. Dipper will hoist through the bank faster and more easily than if you try for a deep cut. Take cut out in layers across face of bank.
- Use two truck spotting wherever possible. Spot trucks in line with arc of swing and spot them the same distance from center of rotation.
- Keep close to your digging — don't "stretch" to reach it. Spot trucks so as to dig and dump at same radius. Move up while waiting for trucks.

Work for smooth, well-balanced operation in a close tie-in with the flow of trucks. Steady operation is what breaks output records and gets out big yardage.

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